

**A COLLABORATIVE APPROACH TOWARDS ENHANCING SYNERGY  
IN A CRITICAL CARE UNIT IN GAUTENG**

by

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**FEBRUARY 2013**

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## **Declaration**

I, **Juliana de Kock**, herewith declare that the thesis, **A COLLABORATIVE APPROACH TOWARDS ENHANCING SYNERGY IN A CRITICAL CARE UNIT IN GAUTENG** is my own work. All sources that have been used or quoted have been indicated and acknowledged by means of complete references. I further declare that this work has not been submitted for any other degree at any other institution.

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**Date**

# **A COLLABORATIVE APPROACH TOWARDS ENHANCING SYNERGY IN A CRITICAL CARE UNIT IN GAUTENG**

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## **Abstract**

In today's world healthcare all over the world is profoundly challenged by rapid technological advancements, violence, terrorism, diverse cultures, proliferating chronic diseases, and the worst nursing shortage. In addition to these complex and daunting challenges healthcare continue to focus the attention on hospitals to review and modify the way care is delivered to patients. As key role players and consistent members of the multidisciplinary team critical care nurses are uniquely positioned to modify and review the quality of patient care through synergy between the patients' needs, the nurses' competencies, and the critical care environment.

A collaborative approach towards enhancing synergy in a CCU was undertaken in a CCU in a private hospital in Gauteng. The study was guided by the American Association for Critical Care Nurses Synergy Model for Patient Care and conducted within the critical social theory paradigm. The nature of the research was descriptive, explorative and contextual and both qualitative and quantitative approaches were used.

Action research cycles were followed to assess existing synergy between the patients' needs, the nurses' competencies and the characteristics of the environment in the CCU. An action plan was formulated and implemented towards enhancing synergy in the CCU. The implemented plan was adjusted based on observations and reflections following each of the five cycles of the project.

## **Key words**

American Association for Critical Care Nurses Synergy Model for Patient Care, action research, characteristics of the environment, critical care unit, nurses' competencies, patient needs.

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## *Dedication*

*This work is dedicated to the love of my life, Christo, and to Cara and Ben-Christo. Their unreserved love, support and belief in me have carried and sustained me over the five years of study.*

*It is also dedicated to the devoted nurses working in the selected critical care unit who showed great commitment towards enhancing synergy in the unit. Their vision of ensuring optimal outcomes for their patients was truly inspiring.*

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## LIST OF ABBREVIATIONS AND ACRONYMS

AACN	American Association for Critical Care Nurses
AHA	American Heart Association
ANOVA	Analysis of Variance
BCA	Best Care Always
BLS	Basic life support
CAUTI	Catheter associated urinary tract infection
CCU	Critical care unit
CD	Compact disc
CLABSI	Central line associated blood stream infection
CPD	Continuous professional development programme
CO	Cardiac output
GCS	Glasgow coma scale
HR	Heart rate
ICN	International Council of Nursing
IHI	Institute for Health Improvement
Kg	Kilogram
LOS	Length of stay
RCN	Royal College of Nursing
RSA	Republic of South Africa
SABS	South African Bureau of Standards
SANC	South African Nursing Council
SAS	Statistical Analysis System
SSI	Surgical site infection
SV	Stroke volume
USA	United States of America
VAP	Ventilator associated pneumonia

## LIST OF ANNEXURES

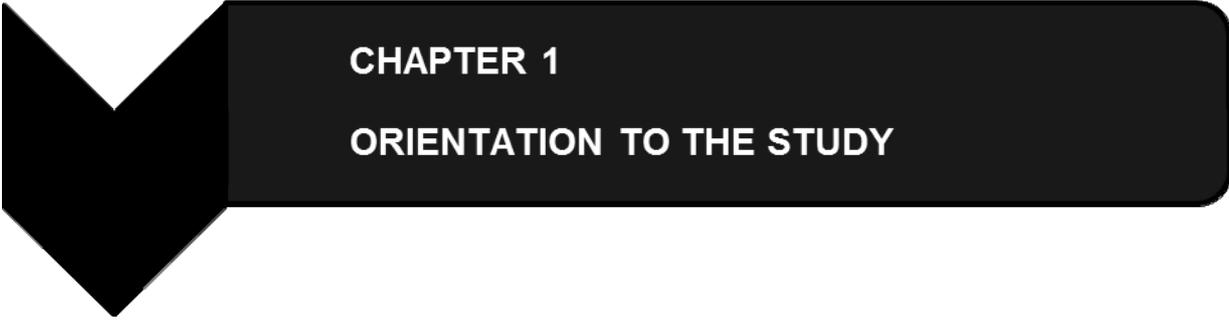
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*For the purpose of **anonymity** the hospital in which the study was conducted will be referred to as **the Hospital** in both text and referencing.*



# CHAPTER 1

## ORIENTATION TO THE STUDY

"People who work together will win, whether it be against complex football defenses, or the problems of modern society."

*Vince Lombardi*

### 1.1 INTRODUCTION

In today's world healthcare all over the world is profoundly challenged by rapid technological advancements, violence, terrorism, diverse cultures, proliferating chronic diseases, and the worst nursing shortage (Duffy & Hoskins 2003:80). In addition to these complex and daunting challenges healthcare continue to focus the attention on hospitals to review and modify the way care is delivered to patients (Curley 2007:xx). Critical care nurses take care of patients with life-threatening diseases and injuries and are key role players in the multidisciplinary team involved in caring for critically ill patients. As key role players and consistent members of the multidisciplinary team critical care nurses are uniquely positioned to modify and review the quality of patient care through synergy between the patients' needs, the nurses' competencies, and the critical care environment (Kaplow & Hardin 2007:4; Prop, Apker, Ford, Wallace, Serbenski & Hofmeister 2010:16,26).

Synergy between the patients' needs, the nurses' competencies, and the critical care environment is influenced by various factors, for example, staff shortages, nurses not reflecting an integration of knowledge, skills, experience, and attitudes, the gap between technology and human caring, discontinuity and anonymity (Berwick 2009:w556; Buchan & Aiken 2008:3262; Formella & Rovin 2004:313; Malott & Ayala 2010).

Hospitalised patients are, according to Bartzak (2010:85), vulnerable and dependent and generally have only two reasonable expectations. Firstly, that no harm will be bestowed upon them as a result of hospitalisation and, secondly, that nurses will provide competent and compassionate bedside care. In other words, in the nurse-

patient relationship patients rely on nurses and base their relationship on trust and the belief that their care and rights are respected and upheld by the nurse. On the other hand, caring interaction with the patient from the committed nurse's side is difficult considering that the unrelenting work pressure, the demands of high technology and intensive specialised care as well as burnout give them little time for the sensitive care that means so much to patients. Yet, it is essential that the needs of nurses and what the profession expects from them are reconciled with the demands for expanded and improved healthcare services so that humane healthcare is rendered.

## **1.2 BACKGROUND TO THE RESEARCH PROBLEM**

Optimal patient outcomes are directly linked to the degree of synergy between the patients' needs, the nurses' competencies and the characteristics of the environment (Curley 2007:1; Kaplow & Hardin 2007:4). To establish synergy in the aforementioned three domains must be central in the search for optimal care. Patients' needs have to be identified to enable nurses to match patients' needs to their (the nurses') own competencies, and an environment conducive to quality care must be created. If one of these three domains are neglected or absent it disrupts the synergy and quality patient care is placed at risk.

Today nurses are challenged with more informed and knowledgeable patients in the critical care environment. The internet, the media, government and society at large have empowered patients to be more aware about healthcare, patients' rights, their illnesses and the outcomes of illnesses. As Good (2009:3) states, patients today demand quality care and competent nurses. Therefore, to deliver the expected and demanded care, nursing care must be reliable, consistent and provided in a trustworthy way regardless of the patient's diagnosis or prognosis. According to Rushton, Reina and Reina (2007:19), if trust is not present in each encounter with patients and their families, both the patients and the families will question the goals of care and commitment of the multidisciplinary team who render care to the patient.

Contrary to the patient needs, Duffy (2009:9) raises her concern about the devaluation of the 'caring' aspect in nursing and the influence it might have on the quality of patient care. The nurses working in critical care units (CCU) in the Republic of South Africa (RSA) , who have to deliver the quality care are described by Scribante and

Bhagwanjee (2007:1317-1318) with the words “low morale”, “tiredness” and discontent”. Research done by Botha (2009a:17) also reveals a need for updating the knowledge and skills of critical care nurses in the RSA. Botha (2009a:17) supported Scribante and Bhagwanjee (2007:1317), and found that the quality of training and the continuing medical education in CCUs in the RSA are dubious. Owing to the staff shortages, hospital management depend on nurses working in the CCUs without experience in critical care nursing, thus increasing the risk to patients (de Beer, Brysiewicz & Bhengu 2011:6; Scribante & Bhagwanjee 2007:1318).

According to Wenham and Pittard (2009:178) the CCU is a potentially hostile environment for the vulnerable critical ill patient, and that environmental factors such as noise, restriction of mobility, ambient light, and social isolation contribute to delirium, which results into an increased length of stay and increased mortality. Kupperschmidt, Kientz, Ward and Reinholz (2010), concur with Wenham and Pittard that the influence the environment has on quality care must not be underestimated.

This gloomy picture of the nurses working in the CCUs and the influence the environment has on the patients’ outcomes challenges accountable and committed nurses to focus on enhancing synergy between the patients’ needs, the nurses’ competencies, and the critical care environment that will lead to higher clinical effectiveness and enhanced patient outcomes (Good’s 2009:4).

### **1.2.1 The setting**

This study was conducted in the RSA in the Gauteng Province.

#### **1.2.1.1 *Republic of South Africa***

The RSA is located at the southern tip of the African continent. It borders Namibia, Botswana, Zimbabwe, Mozambique, Swaziland, and Lesotho, (an independent enclave surrounded by South African territory) and surfaces an area of 1 219 090 km<sup>2</sup> (South Africa: an introduction 2011). The country is divided into nine provinces namely the Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, Northwest, and Western Cape.

The healthcare system in the RSA consists of private and public health sectors, with a comprehensive primary healthcare approach. The private sector is profit driven and renders only a service to 20% of the RSA population covered by medical insurance. The public sector, on the other hand, is funded by tax payers money and renders a service to 80% of the RSA population, half of whom do not have formal employment. Critical care nursing services are structured and graded from level one to level four. Level one CCUs are in the public sector and are located in tertiary hospitals, which are affiliated to universities and have sophisticated equipment to manage a wide spectrum of critically ill patients. Level one CCUs have a dedicated intensivist and operates as closed units. The CCUs in the private sector ranges from level two to level four and function as open units with limited input from intensivists. Level two CCUs specialise in neurological or coronary care. Level three CCUs can provide limited invasive monitoring and are found in community hospitals. High care units are graded at level four (de Beer, Brysiewicz & Bhengu 2011:6).

There are a total of 4 168 critical care beds in the RSA, with 57% in the private sector and 43% in the public sector. Twenty-three per cent of all the beds are not utilised due to staff and equipment shortages.

### **1.2.1.2 Gauteng Province**

Although Gauteng is the smallest of the provinces it serves as the gateway into Africa. Gauteng's history lies embedded in the discovery of gold, and today this province not only has one of the best infrastructures, but its population of over nine million people form part of a vibrant mix of energy and diversity that makes it one of the wealthiest provinces in Africa.

According to the Gauteng provincial government's programme of action (Gauteng Provincial Government 2009:12), there are a number of challenges in healthcare that need to be addressed in the movement forward towards 2014. A major challenge is to build healthy and productive people through the elimination of disparities as regards the access to and the quality of healthcare in the province. Universal access and improvement of the quality of public healthcare including services for the poor and the most vulnerable are priorities. This will be coupled with the promotion of healthy lifestyles to improve the health status of Gauteng residents. The fight against

tuberculosis, malaria, the human immunodeficiency virus and acquired immune deficiency syndrome and other diseases will be continued relentlessly.

### **1.2.1.3      *The hospital***

The hospital in which this study was conducted is a level two private hospital in Gauteng with a 358 bed capacity that offers its patients access to the latest and most technically advanced medical and surgical interventions. The selected hospital has a multidisciplinary critical care unit and a neuro-orthopedic critical care unit. The selected CCU is the multidisciplinary unit admitting patients with medical disorders as well as patients who have undergone surgery. The CCU has nine beds and functions as an “open” unit.

In the RSA CCUs operates as open or closed CCUs. For the purpose of this study the criteria mentioned next are used for open and closed CCUs. In an open CCU any medical doctor can admit, treat and discharge patients to and from the CCU. The unit has a nursing manager and the equipment is according to the requirements of the South African Bureau of Standards (SABS), (Scribante & Bhagwanjee 2007:1319). Rothschild (2010) describes an open CCU as a unit where any medical doctor may admit a patient but with an intensivist available for elective consultation. Rothschild regards a closed unit as a unit where patients are only admitted by an intensivist. A closed CCU has a medical doctor as a medical director, a unit nursing manager and the equipment is as required by the SABS. An ideal closed unit has an accredited intensivist as the medical director; the unit manager is a qualified critical care nurse and the equipment is according to SABS requirements.

The Institute for Healthcare Improvement (IHI) (2011a) agrees with the above definitions by describing an open unit as a unit where any physician is allowed to admit and treat a patient without obtaining critical care consultations. A closed unit is described as a unit where admittance of a patient is only possible when the patient is cared for by a CCU staff physician.

This study was conducted in an open CCU as the admission of patients was not restricted to a specific doctor. In the CCU in Gauteng the patients were admitted by five physicians and four surgeons. A multidisciplinary approach was followed in which

critical care nurses, surgeons, physicians, radiologists, physiotherapists, dieticians, phlebotomists, and counsellors worked together as a team. Critical care nurses included both professional/registered nurses and staff/enrolled nurses.

A professional or registered nurse is defined by the Nursing Act (South Africa 2005:34) as “a person who is qualified and competent to independently practise comprehensive nursing in the manner and to the level prescribed and who is capable of assuming responsibility and accountability for such practice”. A staff nurse or an enrolled nurse is defined by the same Act (South Africa 2005:7) as a “person educated to practise basic nursing in the manner and to the level prescribed under the supervision of the registered nurse”.

### **1.2.2 The position of the researcher**

At the time this study was conducted, the researcher had worked as a shift leader in the selected hospital's CCU for 14 years. She had 28 years' experience in critical care nursing and was considered as an expert in the field of critical care nursing. She was transferred to the training and education department of the selected hospital as the clinical facilitator responsible for the clinical guidance of students studying for their diploma or certificate in critical care nursing where she conducted the last two years of her five years' study. She regards reflection in practice as an essential component for nurses in the CCU to work independently and with confidence.

Among others, her tasks included overseeing that optimal healthcare was provided to all patients in the CCU. To achieve optimal care the needs of the patients had to be met by the competencies that nurses possessed. For example, nurses had to be able to use their knowledge and skills, which included critical-analytic skills, to cater for patients in need of mechanical ventilation. In addition to oversee patient care and facilitating the competencies of nurses in the CCU, the researcher also had to deal with the multidisciplinary team who consists of medical practitioners, dieticians, physiotherapist, phlebotomists, counsellors, and radiologists.

Based on the responsibilities of the researcher as outlined above, she noticed that patients and their families were consistently complaining about the poor quality of care they were receiving and the anxiety this caused them. In addition, the researcher also

observed that nurses often lacked the ability to think critically and act accordingly to meet the needs of the patients, e.g. when writing a nursing care plan, the assessment done do not correlate with the nursing diagnosis made. Moreover, medical practitioners and other members of the multidisciplinary team formally and informally complained to the researcher about the seeming lack of knowledge and skills of the nurses.

### 1.3 RESEARCH PROBLEM

Loiselle, Profetto-McGrath, Polit and Beck (2010:96) describe a problem statement as “an expression of a problematic situation” that includes the concerns that have to be addressed. The reflections received on the hospital’s official ‘Voice of the Customer’ questionnaire (see Annexure G.2 on compact disc [CD]) from patients concerning the care they received in the CCU; the verbal and written remarks (see Annexure G.3 on CD) of the nurses overheard and seen by the researcher, and the researcher’s own entries in her diary about the nurses’ experiences working in this CCU environment revealed an urgent need to address synergy. Following obtaining permission from the hospital’s Human Resources Department reflections of the patients voiced on the ‘Voice of the Customer’ are tabulated in Table 1.1. The critical care nurses voiced their concerns in written format and provided verbal consent to use the quotes (see Table 1.1).

**TABLE 1.1: REFLECTIONS OF PATIENTS AND NURSES IN THE CCU**

PATIENTS’ REFLECTIONS ON CARE IN THE CCU	NURSES’ REFLECTIONS REGARDING THEIR EXPERIENCE IN THE CCU
<ul style="list-style-type: none"> <li>• “...the care here is appalling...”</li> <li>• “...some nurses are amazing, some are not...”</li> <li>• “...nurses need to upgrade their knowledge and skills...”</li> <li>• “...your nurses (the CCU nurses) are unqualified...”</li> <li>• “...we need better care during the nights...”</li> </ul>	<ul style="list-style-type: none"> <li>• “...I (CCU nurse) hate this place (CCU), I don’t know why I come back every day...”</li> <li>• “...nobody cares...”</li> <li>• “...care is deteriorating or not done at all...”</li> <li>• “...we can’t cope anymore...”</li> <li>• “...we (CCU nurses) are not respected anymore; we are only taking orders from doctors...”</li> </ul>

The patients’ and nurses’ disturbing feedback and comments as shown in Table 1.1 raised the researcher’s concern about synergy in the CCU. She pondered the question whether synergy in the CCU could be enhanced through a collaborative approach by the healthcare professionals working in the CCU environment.

## 1.4 RESEARCH QUESTION

This study was based on the following question: How can synergy be enhanced collaboratively in the CCU in a private hospital in Gauteng?

## 1.5 AIM AND OBJECTIVES

In order to address the research question, the aim and objectives of a research study are formulated to link the abstract problem statement and the study's design and plan for data collection (Burns & Grove 2011:69).

The aim of this study was to collaboratively enhance synergy in the CCU in a private hospital in Gauteng. To achieve this aim the objectives were set related to the cycles followed towards enhancing synergy in the CCU. The objectives were set for each of the cycles and are listed below.

### PHASE 1: ASSESS SYNERGY

#### **Cycle 1: Step1, Step 2 and Step 3: Assess synergy: Patients' needs**

- Objective 1: Assess patients' physiological and physical needs
- Objective 2: Assess patients' psychological needs
- Objective 3: Assess families' needs

#### **Cycle 2: Step 4: Assess synergy: Nurses' competencies**

- Objective 4: Assess nurses' competencies

#### **Cycle 3: Step 5: Assess synergy: Environment characteristics**

- Objective 5: Assess characteristics of the environment

### PHASE 2: TOWARDS SYNERGY

#### **Cycle 4: Step 6: Assess existing synergy in the CCU**

- Objective 6: Assess existing synergy in the CCU

**Cycle 4: Step 7: Objective 7:**

- Prioritise and plan action to enhance synergy in the CCU

**Cycle 4: Step 8: Objective 8:**

- Activate implementation of the planned actions in the CCU

**Cycle 4: Step 9: Objective 9:**

- Review the action plan

**Cycle 5: Step 10: Objective 10:**

- Activate implementation of the reviewed actions in the CCU

**Cycle 5: Step 11: Objective 11:**

- Re-assess the working environment

**1.6 SIGNIFICANCE AND CONTRIBUTION OF THIS STUDY**

The researcher envisaged that this study would reveal the views of patients and their families regarding the healthcare provided to them in a selected CCU. Enhancing synergy will result in satisfied patients and an increased level of trust between the patients and the nurses. Furthermore, by strengthening the synergy the patients and their families will also receive the care they envision as reflected in Table 1.1 and concurs with the views of Hardin and Kaplow (2005:43), Kaplow and Hardin (2007:22) and Wolf and Greenhouse (2007:384). Focusing on synergy may also contribute to the delivery of optimal care which, in turn, will indirectly result in a shorter length of stay (LOS) in the CCU while also minimising the patient's readmission to the CCU.

With the enhanced synergy in the selected CCU the nurses' competencies will be driven by the patients' needs on the one hand, while on the other the patients' outcomes will be improved as nurses will be able to meet their care and treatment objectives and manage the physiological changes in patients. Moreover, the presence of preventable complications may be decreased or even become non-existent (Hardin & Kaplow 2005:6-8). Kupperschmidt et al (2010) note that, despite nurse leaders' efforts to create a healthy work environment for nurses the latter continues to resign and leave the profession. Critical care nurses are therefore challenged to intently and purposefully look inward and focus on what they have to do to create a healthy work environment for

them and the patients. Since this study was a collaborative approach which included the critical care nurses, it was the researcher's vision that the study will contribute to the empowerment of nurses in the CCU to take responsibility and create a healthy work environment.

By assessing the characteristics of the environment that disrupted synergy in a CCU, it was perceived that this study, by limiting and identifying these deficiencies, may contribute significantly to reinforce synergy in the CCU under study. It was further envisioned that another outcome of this study will be that communication channels among the multidisciplinary team will be opened. This will further contribute to the restoring of mutual trusting and respectful relationships that will certainly benefit the patient care.

## **1.7 DEFINITION OF KEY CONCEPTS**

A single construct can have different meanings for different people; therefore, for the purposes of a common understanding, simplicity and consistency the following key terms used in this study are clarified next.

### **1.7.1 Collaborative approach**

The *Merriam-Webster Online Dictionary* (2011) defines the concept collaborate as "to work jointly with others or together especially in an intellectual endeavour". Synonyms for the word collaborate are indicated as "together, cooperate, conjoin, conspire, join and team (up)".

In this study a collaborative approach was used to indicate nurses working alongside each other to achieve something. The nurses and the multidisciplinary team worked together as a team to enhance synergy in a CCU. The aim of this collaborative approach was to heighten synergy among the needs of the patients, the competencies of the nurses, and the characteristics of the environment (Hardin & Kaplow 2005:4). Collaboration is also, according to the (American Association for Critical Care Nurses (AACN), a prerequisite for a healthy work environment (AACN 2005:1).

### **1.7.2 Competency**

Quinn and Hughes (2007:297) define competency as “the possession and the development of sufficient skills, knowledge, appropriate attitudes and experience for sufficient performance in life roles”.

The AACN (2012) states patients become more complex and new technologies and treatments are introduced. The competencies of the critical care nurse have to keep pace with these changes and the nurses have to enhance their knowledge and skills with regard to the newest evidence-informed practice to meet the needs of the critically ill patients. This definition applies to the study.

### **1.7.3 Critical care environment**

Environment is defined in the *Merriam-Webster Online Dictionary* (2011) as “the circumstances, objects, or conditions by which one is surrounded”.

According to the AACN (2012) environments are safe, healing and humane workplaces in which care is taken of each other.

In the context of this study the critical care environment is regarded as the third component of the AACN Synergy Model for Patient Care. The critical care environment under study was a multidisciplinary critical care unit.

### **1.7.4 Critical care units**

According to *Mosby's Online Medical Dictionary* (2012), a critical care unit is “a specially equipped hospital area designed for the treatment of patients with sudden life-threatening conditions. Critical care units contain resuscitation and monitoring equipment and are staffed by personnel specially trained and skilled in recognizing and immediately responding to cardiac and other emergencies.”

Urden, Stacey and Lough (2010:2) regard critical care units as specialised units or departments where the emphasis is placed on the continuum of care.

In this study the concept critical care unit referred to a multidisciplinary unit admitting patients with medical disorders as well as patients who had undergone surgery. The patients admitted in the CCU were critically ill and need continuous monitoring to ensure haemodynamic stability and immediate response to cardiac or other emergencies by trained and skilled critical care nurses.

### **1.7.5 Critically ill patient**

Ghali (2008) defines a critically ill patient as a patient who is “at imminent risk of death; the severity of illness must be recognized early and appropriate measures taken promptly to assess, diagnose and manage the illness”.

The AACN (2012) defines critically ill patients “as those patients who are at high risk for actual or potential life-threatening health problems. The more critically ill the patient is, the more likely he or she is to be highly vulnerable, unstable and complex, thereby requiring intense and vigilant nursing.”

In this study the critically ill patients referred to the patients admitted to the selected CCU and regarded by the medical practitioners working in the selected CCU as patients who were at high risk for actual or potential life-threatening health problems.

### **1.7.6 Enhance**

The *Merriam-Webster Online Dictionary* (2011) defines enhance as “to increase or improve in value, quality, desirability, or attractiveness”.

Hardin and Kaplow (2005:4) state, according to the AACN Synergy Model for Patient Care, optimal patient outcomes are enhanced when there is synergy between the needs of the patients, the competencies of nurses, and the characteristics of the environment. In this study, the concept enhance referred to the application of knowledge, skills and attitudes by nurses to improve or increase synergy in a selected CCU among the needs of the patients, the nurses’ competencies and the characteristics of the environment.

### **1.7.7 Family**

The *Collins English Dictionary* (2010) defines a family as “a primary social group consisting of parents and their offspring, the principal function of which is provision for its members” and “one’s wife or husband and one’s children”.

Kaplow and Hardin (2007:16) describe the family as the basic unit of care; they are the individuals identified by the patient as important and significant and who influences his or her care and well-being. The family of the patients is not necessarily biologically or legally related.

In this study the family was regarded as the individuals identified by the patients as important and significant in their lives but who was not necessarily biological or legally related to the patients. The family of the critical ill patient was regarded as a part of the patient’s life and was seen as one of the patients’ needs (Kaplow & Hardin 2007:17).

### **1.7.8 Nurse/Nursing**

The definition by Florence Nightingale is universally accepted as one of the cornerstones in defining nursing: “Nature alone cures ... and what nursing has to do ... is to put the patient in the optimal condition for nature to act upon him.” (Royal College of Nursing [RCN] 2003:6).

The RCN (2003:6) stress that Virginia Henderson’s definition of nursing was adopted by the International Council for Nurses (ICN) in 1960 and is still, and has always been, used to define the nursing profession: “ to assist the individual, sick or well, in the performance of those activities contributing to health or recovery (or to peaceful death) that he would perform unaided if he had the necessary strength, will, or knowledge, and to do this in such a way as to help him gain independence as rapidly as possible.” This aspect of her work, this part of her function, she initiates and controls; of this she is master.”

In the view of Prop et al (2010:16-26), nurses are the most consistent healthcare providers at the patient’s bedside and are therefore key role players in the healthcare team.

The Nursing Act (South Africa 2005:6) defines nurse and nursing as follows:

“Nursing in a caring profession practiced by a person registered with the SANC, which supports, cares for and treats a health care user to achieve or maintain health and where this is not possible, cares for a health care user so that he or she lives in comfort and with dignity until death.”

For the purpose of this study the concept nurses related to all individuals who had been registered as registered nurses or registered as staff or enrolled nurses with the SANC and who delivered nursing care to patients who had been admitted to the selected CCU.

### **1.7.9 Synergy**

The *Merriam-Webster Online Dictionary* (2011) describes synergy as “a mutually advantageous conjunction or compatibility of distinct business participants or elements”. The term ‘synergy’ originates from the Latin word *synergia* or the Greek word *synergos* which both mean “working together”.

According to Curley (2007:3), synergy refers to “an evolving phenomenon that occurs when individuals or groups work together towards a common goal”. In other words, better outcomes are achieved if there is cooperation between a nurse and the patient; these positive outcomes, however, cannot be achieved if “the nurse and the patient act independently. Enhanced outcomes can be ensured when patients and nurses are working together in a healthy work environment.”

For the purpose of this study the concept synergy referred to the interdependence between the patients’ needs, the families’ needs, the nurses’ competencies, and a healthy working environment to strive towards a co-constructed vision of ‘*Unit of Excellence*’.

## **1.8 ASSUMPTIONS OF THIS STUDY**

Assumptions are statements or propositions that researchers assume to be true for the purpose of research or discourse (Polit & Beck 2010:14). Because they are regarded as axioms, the researcher does not question their truth value or submit them to empirical

testing. The truth of an assumption is accepted for the purpose of the investigation at hand. They function as foundational beliefs or statements that support whatever decisions are made by the researcher in the research process. Assumptions are those statements that are considered to be true – even though they might never have been scientifically tested (Burns & Grove 2009:40).

For the purpose of the current study, the worldview of the critical theorists influenced the ontological, epistemological and methodological assumptions of the researcher.

### **1.8.1 Ontological assumptions**

Ontology refers to the philosophical study or examination of the nature of being or reality. The only reality is “that which is socially constructed by the individuals involved in the research situation”, and these individuals are the researcher, the participants and the consumers of the research product (Holloway & Wheeler 2010:21; Polit & Beck 2010:11).

Polit & Beck (2010:13) describe reality as multiple, subjective and mentally constructed by individuals and that reality arises out of each individual’s perception of his or her experience. The critical point in these definitions is not what is objectively happening, but rather what individuals perceive to be happening. What is therefore important to an observer such as a researcher is to obtain an understanding of how individuals experience the personal and social reality in which they live. Patton (2002:96) describes this philosophy as constructivism (which he characterises as the opposite of constructionism or positivism), that “begins with the premise that the human world is different to the physical world and hence must be studied differently”.

Patton (2002:96) argues that because human beings are capable of interpreting the ways in which what is called reality is constructed, the content of human perception cannot be said to be physically real in an absolute sense since it is shaped, influenced and formed by individual and collective cultural and linguistic constructs. However, to say that the socially constructed world of the human being “is not physically real”, certainly does not mean that it is not perceived and experienced by individual people as totally real. Patton (2002:96) places an interesting angle on this point of view when he cites Thomas’ (1928) theory that “what is defined or perceived by people as real is real

in the consequences”. Constructivists therefore study and pay careful attention to the multiple realities that are constructed by individual people and to the consequences of such constructions. Such consequences are visible in the lives of people and in the way in which they interact with one another.

According to Kidd and Kral (2005:187), the critical theory may be categorised under the constructivist theory which promotes personal growth in addition to embracing the concept of empowerment. Critical theorists ask: “How can this situation be understood in order to change it?” (McNiff & Whitehead 2006:41). Critical theorists describe the relationship between the researcher and the participants as an interactive relationship and reality is therefore co-constructed and evolving (Doucet, Letourneau & Stoppard 2010:310).

The ontological assumptions made by the researcher in this study were inclusive of the following undertakings of beliefs:

- The patients, their families and nurses in the CCU are unitary, indivisible, whole, open beings who bring their own values with them to the CCU; exercise freedom of choice and through co-participation with the critical care environment, they expect to be treated with dignity and respect.
- Patients and nurses have their own rights and the researcher’s values should not imposed on patients or on nurses.
- The researcher and nurses engage with patients to know how patients experience being in a CCU; they help the patients to cope with their feelings and meet their needs to ensure optimal outcomes.
- The researcher is not an observer but form a partnership with the nurses to collaboratively enhance synergy in the CCU - the focus is on what “we” are doing and not on what “they” are doing.

### **1.8.2 Epistemological assumptions**

According to Holloway and Wheeler (2010:21), epistemological assumptions are concerned with what counts as valid knowledge. Epistemological assumptions also refer to how the researcher understands knowledge and how it can be obtained. Knowledge is further regarded as uncertain and answers are obtained from negotiations. Learning

takes place through experience and comprises reflecting on experience in practice (McNiff & Whitehead 2006:17-18).

According to Polit and Beck (2010:274) and Kidd and Kral (2005:187), the critical theorists reject an objective and disinterested researcher but endorse research that collaborates with participants who embrace the process of producing knowledge with sharing ideas and respecting the knowledge of others. In action research knowledge is correlated to action and participation. Kidd and Kral (2005:188) add that critical theory implicates knowledge is obtained through partnerships that provides a valuable perspective by establishing a reciprocated meeting place in which cultural differences are accepted and misinterpretations are minimised. Guba and Lincoln (2005:191) state the fundamental epistemological assumption of the critical theorists is that the researcher and the participant are interconnected with the values of both influencing the research process.

Collaboration between the researcher and the participants is of utmost importance to ensure progress in the research process. In the current study, the following epistemological assumptions were made by the researcher.

- The patients are informed and knowledgeable about their illness, treatment and outcomes and could learn from nurses.
- Patients should be allowed to participate in their care and in decision making, and they also have the right to ask for a second opinion.
- Nurses do not act on their “gut feeling” but on evidenced informed facts obtained through observation and experiments.
- Nurses have to develop their critical analytical thinking through reasoning from what they assess and use the evidence to make accurate nursing diagnoses with the appropriate goals and interventions to ensure optimal patient outcomes.
- Nurses’ competencies have to match with the patients’ needs to obtain optimal patient outcomes.
- Enhancing synergy in a selected CCU is a collaborative approach between the researcher and the nurses.

### **1.8.3 Methodological assumptions**

According to Somekh and Lewin (2005:347), methodology relates to the way in which the research was conducted. Methodological-technical assumptions describe the criteria that are regarded as scientific together with the methods and instrumentality by means of which a given view of what is scientifically valid, may be realised. Holloway and Wheeler (2010:21) and Loiselle et al (2010:11) concur that methodological-technical assumptions describe the nature of the research process and the most appropriate methods for the research project.

In order to clarify the methodological-technical assumptions about the accuracy of the information contained in the data, a researcher needs to explain what steps she or he proposes to take in order to certify the applicability of the information obtained from the informants by making use of the process of triangulation from different sources of information Doucet et al (2010:301) agree that quantitative data are used in combination with qualitative data because it increases the validity of the research. The researcher used action research as the research methodology in this study and an explorative, descriptive, contextual, qualitative and quantitative design were applied to formulate, plan and implement the study to attain the specific research objectives.

For the purposes of this study the additional assumptions made by the researcher are listed next.

- As an action research study the nurses in the CCU are actively involved throughout the research process.
- The study begins with a concern and developed into an on-going cycle of action and reflection.
- The “lived experiences” of the patients and families are essential since a real picture of the patients’ and their families’ psychological needs have to be obtained.
- The researcher’s as well as the participants’ critical reflect upon praxis which will stimulate new and creative ways of thinking (Johansson & Lindhult 2008:104).

## **1.9 THEORETICAL FRAMEWORK**

The AACN Synergy Model for Patient Care (Hardin & Kaplow 2005:1) guided the

collaborative approach between the researcher as the clinical facilitator and the critical care nurses in the CCU to enhance synergy.

The concept synergy in the AACN Synergy Model for Patient Care emerges from the interaction between the patients' needs and the nurses' competencies; it is supported and nurtured by the characteristics in the healthcare environment to result in optimal outcomes for the patient, the nurse and the system. The patient-nurse relationship in the AACN Synergy Model for Patient Care is characterised by interdependency, intersubjectivity, shared commonality, and equity. The joint action between the nurse and the patient results in a better outcome than that which would be achieved independently (Curley 2007:3; Kaplow & Hardin 2007:4). An in-depth overview of the AACN Synergy Model for Patient Care is provided in Chapter 2.

## 1.10 RESEARCH METHODOLOGY

The research methodology used in this study was action research. Bradbury and Reason (2008:1) define action research as “a family of practices of living inquiry that aims, in great variety of ways, to link practice and ideas in the service of human flourishing.”

Waters-Adams (2006) summarise the common elements of action research that will be present in most definitions of action research. At this point it is important to note that although Waters-Adams (2006) writes from a teacher's perspective, the same author affirms that the noted common elements can be applied in the medical and the social sciences, thus *teacher* can change to *nurse* for the purpose of the current study. The common elements are summarised next.

- Action research is conducted by teachers who strive to understand and to improve their practice.
- Action research progresses through a cycle of planning action and reflection upon action.
- Action research entails the gathering of evidence about practice.
- Action research entails teachers trying to see the effects of planned change in their practice.
- Action research strives to be organised and accurate.

- The analysis and knowledge formed in action research belong to the practitioner. Stringer (2007:20) concludes that action research in most of its effective forms is phenomenological, interpretive and hermeneutic. Phenomenological in the sense that it focuses on the actual lived experience of the people; interpretive as it focuses on people's interpretation of acts and activities; and hermeneutic as action research incorporates the meaning people make of events in their lives.

Action research appealed to this researcher because of its success in facilitating change and improving healthcare. The use of this methodology is reinforced by literature such as Koshy, Koshy and Waterman (2011:10), Reason and Bradbury (2008:1), and Stringer (2007:10).

The research design and methods is discussed in detail in Chapter 3. The action research cycles with the necessary objectives, steps, research design, data collection and sampling are summarised in Table 1.2.

**TABLE 1.2: SUMMARY OF THE CYCLES, OBJECTIVES, STEPS, RESEARCH DESIGN AND METHODS**

PHASE 1: ASSESS SYNERGY				
CYCLE 1				
Objective	Step	Design	Research methods	
			Data collection	Sampling
1. Assess patients' physiological and physical needs 2. Assess patients' psychological needs	<b>Step 1:</b> Document analysis of the patients' physical and physiological needs in a selected CCU using the CCU flow charts <b>Step 2:</b> Open-ended interviews with patients to assess their psychological needs and their experience of nursing care	Quantitative, and qualitative	<b>Step 1:</b> Document analysis of 124 patients admitted to a CCU to assess their physical and physiological needs. Document analysis was done from the patients' CCU flow sheets <b>Step 2:</b> Open-ended interviews with patients assessing their psychological needs and their experience in the CCU	<b>Sample:</b> <b>Step 1: Systematic random sampling:</b> Patients admitted in the selected CCU were randomly selected from 1 June 2010 to the 31 May 2011.  <b>Step 2:</b> First available patients complied with the inclusion criteria from 1 August 2011 to 9 September 2011 until data saturation was reached
3. Assess families' needs	<b>Step 3:</b> Open-ended interviews with the families of patients in the selected CCU about their experiences in the selected CCU	Qualitative	<b>Step 3:</b> Open-ended interviews with the families of patients in a selected CCU	<b>Step 3:</b> Available family members of patients admitted in a selected CCU in Gauteng 1 August 2011 to 9 September 2011 until data saturation
CYCLE 2				
4. Assess nurses' competencies	<b>Step 4:</b> To assess the competencies of nurses working in a selected CCU in Gauteng against the needs of the patients obtained in Step 1	Quantitative	<b>Step 4:</b> Competency rating scales obtained from the training and education department in the private hospital in Gauteng.	<b>Sample:</b> Purposive sampling 19 September 2011 to 12 October 2011
CYCLE 3				
5. Assess characteristics of environment	<b>Step 5:</b> To assess the environment in a selected CCU	Quantitative	<b>Step 5:</b> AACN's healthy work environment assessment tool to assess the work environment in the CCU	<b>Sampling:</b> Purposive sampling, nurses working in a selected CCU in Gauteng 23 August 2011 to 15 September 2011

PHASE 2: TOWARDS SYNERGY				
CYCLE 4				
Objective	Step	Design	Research methods	
			Data collection	Sampling
6. Assess existing synergy in the CCU	<b>Step 6:</b> To interpret and analyse the obtained information in Steps 1-5	Qualitative	<b>Step 6 and 7:</b> One focus group interview with the nurses and deputy nursing manager (7 participants)  Field notes	<b>Sample:</b> Purposive sampling <b>Step 6 and 7:</b> Nurses working in a selected CCU in Gauteng 13 October 2011
7. Prioritise and plan action to enhance synergy in the CCU	<b>Step 7:</b> Planning and formulation of an action plan	Qualitative		
8. Activate implementation of the planned actions in the CCU	<b>Step 8:</b> Implement the action plan		Meeting Reflective diary	<b>Sample:</b> Purposive sampling <b>Step 8:</b> Nurses working in a selected CCU in Gauteng 7 November 2011 to 30 December 2011
CYCLE 5				
9. Review the action plan	<b>Step 9:</b> Review action plan	Qualitative	Informal group discussion Meeting	<b>Sample:</b> Purposive sampling <b>Step 9:</b> Nurses working in the CCU between the 1 August to 31 December 2011
10. Activate implementation of the reviewed actions in the CCU	<b>Step 10:</b> Implement the reviewed plan		Step 11: AACN's healthy work environment assessment to evaluate the work environment in the selected CCU	<b>Sample:</b> Purposive sampling <b>Step 10:</b> Nurses working in a selected CCU in Gauteng 2 July to 31 July 2012
11. Re-assess the working environment	<b>Step 11:</b> Re-assess environment	Quantitative		Project will continue but for study purposes the researcher ended the project 30 June 2012

The research methodology, design and methods used during the five action research cycles are discussed in-depth in Chapter 3.

## **1.11 ETHICAL CONSIDERATIONS AND CONCERNS**

Neuman (2006:129) defines ethics as “what is or is not legitimate to do or what moral research procedures involve”. Stommel and Wills (2004:373) define ethics as “an academic discipline based in the philosophic and social sciences that is concerned about both descriptive and prescriptive questions of morality”. Ethical issues are therefore concerns, dilemmas and conflicts that arise over the proper way in which research is conducted.

### **1.11.1 Ethical considerations**

Ethical considerations are essential factors in any research project and it is the responsibility of the researcher to ensure that the participants’ rights are identified and protected (Streubert Speziale and Carpenter (2011:60) add that ethical considerations comprise a set of values and imperatives researchers are obliged to adhere to when conducting a research project. Guidelines relating to these values and imperatives are provided in the Belmont Report and the Declaration of Helsinki (Burns & Grove 2009:188). The three key ethical principles articulated in Belmont Report (1979) are the principles of beneficence, respect for human dignity, and justice.

- **The principle of beneficence**

In this study the researcher ensured confidentiality throughout the study, and all participants, the critical care nurses and the patients and their families, were informed that their names and identities would not be revealed at any stage of the study, nor when the results are disseminated.

- Freedom from harm

In this study, the data collection process was conducted in accordance with the rules and requirements of the University of South Africa and the rules of the selected hospital under study. The open-ended interviews were computer recorded, and if the patient

refused recording the researcher recorded the data verbatim in writing as the participants spoke, and then checked her notes for accuracy with the participants at the end of each discussion. Every data collection session was conducted in a private facility that had been allocated by the department specifically for that purpose. This environment was safe, non-threatening and comfortable for all concerned. Although all the participants had given their informed consent, (see Annexure B), in writing to the researcher prior to data collection, the researcher verbally repeated the purpose of the study as well as the content of the informed consent document to each participant before data collection commenced. The researcher then asked each of the participants to describe the meaning of their lived experiences as they perceived them. In order to facilitate this process, the researcher made use of an interview guide (see Annexure C.3) for this purpose. No questions that could be construed as threatening or compromising were asked. When the researcher felt that she needed more information on a particular point she encouraged participants to elaborate in more detail on the issue concerned without any hint of intrusion or compulsion. Each participant was given an opportunity to ask questions prior to and after data collection. The researcher followed exactly the same procedures when collecting data in the focus group interviews.

During the document analysis the files were locked away in the nursing service manager's office and never left the hospital premises. No photocopies of the files were made. The patients' name stickers in the admission register were marked with a small pink dot in case an audit of the data would at some time be necessary.

- Freedom from exploitation

Prior to data collection, the researcher repeated the purpose of the study as well as the content of the informed consent document. The researcher also made it clear that data were being collected only for research purposes and asked the participants to remember that the research process should not be regarded as a therapy session. Every individual participant was informed that they would accrue no personal or monetary benefit from their participation in the study.

- Risk-benefit ratio

Although none of the participants benefited directly from this study, it was perceived that the findings of the study will make an important contribution to enhance synergy in the CCU (Burns & Grove 2009:184; Gerrish & Lacey 2006:32; Reid 2009:32; Sims 2010:174; Streubert Speziale & Carpenter 2011:60).

- **The principle of respect and human dignity**

The principle of respect and human dignity were considered throughout this study. The researcher consulted the physicians concerning all aspects of this study and presented them with a complete proposal. She furthermore had numerous interviews with them regarding the inclusion of their patients and the latter's families in this study.

- Right to self-determination

It is evident that the researcher respected the participants' self-determination and human dignity during the research process for the following reasons:

- The researcher made certain that all participation was indeed voluntary.
- The researcher took great care to explain the purpose of the study to each participant.
- The researcher obtained informed voluntary consent from each participant.
- The researcher went to great lengths to explain to the participants that they were under no obligation to divulge any information that they did not wish to share, and that they would not be penalised or disadvantaged in any way if they withheld information.
- She approached them and treated them with the respect due to fellow human beings and concluded her interactions with them by expressing her personal appreciation for their willingness to become involved in the study.

- The right to full disclosure

The researcher adhered to the principle of full disclosure prior to the commencement of the study, during the study itself, and after completion of the study. The researcher

firstly fully disclosed the research and objectives in writing to the selected hospital's ethical committee. Secondly, the right to full disclosure also refers to the disclosure of the aim and objectives and process of the data collection to the participants. In this regard, the researcher explained verbally to the participants the research process in lay terms and also stated that if there were any questions about the research, it could be directed to the researcher during data collection (Burns & Grove 2009:184; Gerrish & Lacey 2006:32; Reid 2009:32; Sims 2010:174; Streubert Speziale & Carpenter 2011:60).

- **The principle of justice**

The principle of justice was considered throughout this study and no patients were unfairly treated and their privacy was ensured at all times.

The right to fair and equitable treatment and the right to privacy was confirmed and assured in the following way:

- All the participants who conformed to the criteria that the researcher had determined for the selection of the participants were selected. The patients and the nurses' privacy were ensured.
- No participants declined to participate after they had been selected and none withdrew from the study after it had commenced.
- All agreements between the researcher and the participants, including the terms of the written informed consent document and the written agreement between the researcher and the selected hospital were adhered to and honoured by the researcher.
- Participants were afforded the right and opportunity to request clarification from the researcher with regard to any aspect of the research prior to, during, and after the completion of data collection – as well as during the follow-up discussions between the researcher and the participants.
- No signs of any physical or psychological problems emerged from any of the participants during the process of data collection.
- Great care was taken to treat all participants with equal respect, dignity and courtesy at all times.
- The anonymity and confidentiality of the participants were assured by the

researcher. The researcher achieved this by protecting the identity of the participants and by not divulging any information about the research to anyone who was not at the time directly involved in the process.

- The participants were indeed told that since the researcher was a graduate student of the University of South Africa, the ultimate findings of the study would have to be made available to the University of South Africa as well as to the selected hospital.
- The participants were also informed that although the findings of the study would be published in a professional journal, their right to personal privacy and their identities would continue to be protected in that publication (Burns & Grove 2009:184; Gerrish & Lacey 2006:32; Reid 2009:32; Sims 2010:174; Streubert Speziale & Carpenter 2011:60).

### **1.11.2 Ethical concerns**

In the current study the researcher had the following ethical concerns:

- **Ethical concerns related to the patients**

The critically sick patients and their families were vulnerable and in a position where they might have felt a lack of control. This was perceived by the researcher as a delicate situation since it was possible that they could have felt obliged to participate in the research project. The researcher was very much aware of the fact that they might experience a sense of feeling powerless to decline participation. She therefore assured the critically ill patients as well as their families that the patients had the right to refuse participation as well as of their right to end participation at any given time without prejudice (Urden et al 2010:16).

Moreover, there was a language barrier between the researcher and the patients as the patients in the CCU were multi-cultured and the researcher was concerned that the patients would not be able to understand the research process and the questions asked if the interviews were conducted in English. Being bilingual, the researcher conducted the interviews with the Afrikaans speaking patients in Afrikaans. For the purpose of this study the Afrikaans quotes received from Afrikaans speaking patients were first reported in Afrikaans and then the English translation was included by the editor. All the other patients were literate in English and therefore their interviews were conducted in

English. The researcher was aware that the interviews could provoke strong emotions or hidden feelings. Fortunately, there was no need for the researcher to refer any of the participant to counsellors (Holloway & Wheeler 2010:57).

- **Ethical concerns about the dual role of the researcher**

The researcher occupied the dual role of the researcher and the clinical facilitator in the CCU in the selected private hospital in Gauteng. According to Coghlan and Brannick (2010:114), the insider status of the researcher is an advantage to her or him because she or he has an implicit understanding and knowledge of the workplace. In support, Williamson, Bellman and Webster (2012:68) add that the insider action researcher tends to have a successful outcome. As an insider the researcher was confident in her belief that she was well acquainted with and knew the strengths, weaknesses, opportunities and threats that existed in the CCU (Williamson et al 2012:68). The researcher was aware of the role conflict that could develop as stated by Roth, Shani and Leary (2007:45). According to Roth et al, role conflict emerges where organisational loyalty, past and present role relationships, and problem identification are encountered.

The researcher's concern in this study was that the nurses could feel uncomfortable because it might have been their perception that their work performance was being judged by others (Westbury 2011). On the contrary, the researcher took great care to distinguish between her role as a researcher and that of a clinical facilitator. The researcher was able to manage the study in the times she was off duty since she was employed on a part-time basis in the selected private hospital in Gauteng (Holloway & Wheeler 2010:57).

- **Ethical concerns about the researcher's workplace**

Another concern for the researcher was that the participants, especially the nurses working in the CCU, might have felt obliged to participate in the study or that they might even give different answers to a professional they knew or, on the other hand, did not know well. Since she was acutely aware that this might be a problematic issue, the researcher consciously highlighted the role of the nurses as co-researchers to collaboratively enhance synergy in the CCU in the selected private hospital in Gauteng. The assessment of the nurses was according to the patients' needs and was

quantitatively assessed with an evaluation instrument compiled by the training and education department of the private hospital in Gauteng; in other words, the subjectivity of the researcher was significantly minimised (Holloway & Wheeler 2010:57).

## **1.12 LAYOUT OF THE STUDY**

The layout of the chapters in this study is as follows:

Chapter 1: Orientation to the study

Chapter 2: Theoretical framework

Chapter 3: Research methodology

Chapter 4: Assess synergy: patients' needs

Chapter 5: Assess synergy: nurses' competencies and characteristics of the environment

Chapter 6: Towards synergy

Chapter 7: Conclusions, limitations and recommendations

## **1.13 SUMMARY**

Chapter 1 gave an orientation to the study. The problem statement was derived from the given background and the aim and objectives were set. The researcher formulated the research questions and provided an overview of the theoretical framework, the research method, the research design, the ethical principles and concerns, and the limitations of the study. An outline of the seven chapters was given. Chapter 2 focuses on the theoretical framework used to guide the researcher in this study.

## CHAPTER 2

### THEORETICAL FRAMEWORK

“Coming together, sharing together, working together, and succeeding together.”

Unknown

#### 2.1 INTRODUCTION

In Chapter 1 an orientation to the study was given. In this chapter the AACN Synergy Model for Patient Care is discussed in detail.

Models are schematic descriptions that explain “how things work” – either in reality or in theory (Murphy, Williams & Pridmore 2010:18). Wolf and Greenhouse (2007:381) posit that nursing models are mostly theoretical or conceptual models based on either an actual theory or on what are believed to be true although not having necessarily been verified. According to Harris, Spinweber, Doherty, Milligan, Addy and Hydo (2007:13), nursing models make sense of a complex reality by explaining the relationship between patient care, nurses, the environment and health. Models serve as a kind of map that illustrates what needs to occur to get from one point to the other; they guide nursing leaders in their assessments, decision making, planning, organisation and evaluation of structures, processes, and outcomes (Wolf & Greenhouse 2007:382). Kaplow and Reed (2008:21) note models illuminate what is essential or relevant to a discipline and, additionally, models for professional practice lead to improved patient outcomes. Kerfoot’s (2006:21) stance is that, in the health environment conceptual models act as *guardrails* that keep health organisation focused on its core mission, namely care giving.

The positive comments recorded in literature by healthcare practitioners on the application of the AACN Synergy Model for Patient Care was the deciding factor which effected the utilisation of the particular model in this study. The following positive comments regarding the implementation of the AACN Synergy Model for Patient Care were found in literature.

The AACN Synergy Model for Patient Care is a user-friendly, highly effective, efficient tool that can be used by novices and experts in all settings and circumstances. The model helps to recognise problems, anticipate the level of care needed, and avoid potential complications by matching the needs of the patients with the nurses' competencies (Collopy 1999).

This model not only reflects on the holistic and dynamic nature of patients but also recognises the role of the family and community in determining the patients' outcomes. In addition, it is adaptable to all areas of nursing practice, from the primary care provider's office to the operating theatre. The model encompasses the neonatal, paediatric, and adult patient care experience (Czerwinski, Blastic & Rice: 1999).

It facilitates the development of a common language for nurses in identifying and communicating the needs of patients (Kaplow & Reed 2008:21).

The AACN Synergy Model for Patient Care involves every aspect of nursing practice (Mullen 2002:68).

This model is an excellent framework to organise the work of patient care throughout the healthcare system (Kerfoot 2002).

The AACN Synergy Model for Patient Care has endless potential and if used properly it can serve as: i) an acuity tool that justifies staffing, ii) a recruitment and retention tool to develop a clinical ladder, iii) a connector between nursing care and diagnoses, and iv) a method of defining the clinical nurse specialist's role (Kaplow & Hardin 2007:8).

## **2.2 HISTORICAL BACKGROUND OF THE AACN SYNERGY MODEL FOR PATIENT CARE**

The AACN Synergy Model for Patient Care was designed by the AACN in the 1990s. It was a combined effort among various renowned nurses in the United States of America (USA) to develop a framework for certified practice in critical care nursing. This model was grounded in nurses meeting the needs of patients and influencing optimal outcomes. The AACN Certification Corporation coordinated and drove the development of the AACN Synergy Model for Patient Care and included nationally recognised experts

in critical care in a think tank to develop a framework for certified practice. Then, in 1995, the AACN Certification Corporation appointed a group of subject matter experts to refine the model and guide a study of practices and job analyses of critical care nurses (Arashin 2010:121;Hardin & Kaplow 2005:xi,3,8).

### **2.2.1 Synergy**

The concept synergy in the AACN Synergy Model for Patient Care emerged from enhanced patient outcomes where patients' needs drive the nurses' competencies and are supported and nurtured by the characteristics in the healthcare environment. Real synergy will only be possible if the three components, namely, the patient, the nurse and the environment, work synergistically to care for patients (Kaplow & Hardin 2007:4). Hardin and Hussey (2003:73) state the key in this model is the linkage between the patients' needs and the nurses' competencies to obtain clinical excellence. In fact, Curley (2007:3) places significant emphasis on the reality that patients need nursing care and nurses need patients to care for; from this interdependent relationship among nurses and patients' synergy evolves. Kaplow and Hardin (2007:4) further elaborate on the synergy between the patient and the nurse by stating the relationship between these two entities is dependent on the characteristics of the environment. Synergy among the patients' needs, the nurses' competencies and the characteristics of the environment will produce patient outcomes greater than the sum of their independent efforts.

### **2.2.2 Assumptions guiding the AACN Synergy Model for Patient Care**

The AACN Synergy Model for Patient Care is based on nine basic assumptions (AACN 2010; Becker, Kaplow, Muezen & Hartigan 2006:133) that guide the identification of the patients' needs and the nurses' competencies to satisfy these needs. Becker et al (2006:133) delineate the nine basic assumptions of the AACN Synergy Model for Patient Care that guide the identification of the needs of the patients and the nurses' competencies to satisfy these needs. According to Alspach (2006:11), most of these assumptions relate to the nurse and the patient, although the healthcare system is addressed directly and indirectly in the same assumptions.

Assumptions guiding the AACN Synergy Model for Patient Care are the following:

- The AACN Synergy Model for Patient Care has a holistic approach. Patients are seen as biological, social, and spiritual entities that are at a particular developmental stage
- Patients bring with them their families and some of the characteristics of their communities to provide a context for the patient-nurse relationship
- Patients can be described by a number of characteristics. The characteristics are interconnected and contribute to each other and cannot be looked at in isolation
- Nurses can be described in terms of a number of dimensions. The interrelated dimensions paint a profile of nurses who interact with patients
- The goal of nursing is to restore patients to optimal levels of wellness as defined by the patients. Death can be an acceptable outcome in which the goal of nursing care is to support patients to a peaceful death
- Nurses create a milieu for the care of patients. The context/environment in which nurses and patients interact influence the actions of nurses. The impact areas between patients and nurses are interrelated and the nature of the interrelatedness may change as the function of experiences, situations and settings change
- Nurses work to optimise outcomes for patients, their families, healthcare providers, and healthcare systems and/or organisations
- Nurses bring their background to each situation, including their levels of education, knowledge, skills and experience.

## **2.3 KEY COMPONENTS OF THE AACN SYNERGY MODEL FOR PATIENT CARE**

As noted by Kaplow and Reed (2008:21), the three vital components that form the core of the AACN Synergy Model for Patient Care are the patients' needs, the nurses' competencies and the characteristics of the healthcare environment. These three components interact hyper-dynamically to form a professional model of practice.

### **2.3.1 Patients' needs**

The AACN Synergy Model for Patient Care puts the patient in the centre of care and makes the statement to the world that the patient comes first. The needs of the patient and his or her family influences and drives the nurses' competencies (AACN 2010). On the patients' side of the model the patients and their families are described in a way that resonates with nurses and caregivers (Kaplow & Reed 2008:19). Patients bring a

unique set of needs to the healthcare situation. Patients' needs are resiliency, vulnerability, complexity, and resource availability, participation in care, decision making, and predictability (Hardin & Kaplow 2005:4).

Kaplow (2003:27) notes that the patients' needs are not labelled in terms of body systems, but in terms of needs with which patients may present at times during the course of their illness. These needs are based on the universal needs of the patients. The needs of patients span on a continuum from illness to health, where the level one patient is complex and the level five patients are minimally complex. Every patient should be assessed because these needs are unique to each patient and her or his circumstances. Every individual fluctuates at different points along this sickness-health continuum and a different picture of the patient is painted. As each patient improves, what may be important one day may be less important on another particular day (Hardin & Kaplow 2005:4).

**Note:**

The **patients' needs** span a continuum of health to illness. Only level 1, level 3 and level 5 on this health to illness continuum are discussed in the literature (AACN 2010; Brewer, Wojner-Alexandrov, Triola, Pacini, Cline, Rust & Kerfoot 2007:162; Kaplow & Hardin 2007:5; Kaplow & Reed 2008:19; McKinley 2007:31).

- **Resiliency**

According to the AACN Synergy Model for Patient Care, resiliency is the patient's ability to return to a restorative level of functioning using compensatory and coping mechanisms (AACN 2010; Hardin & Kaplow 2005:14). The levels of resiliency assessed in patients are dependent on the abilities to rebound after insults. The patient's age, co-morbidities, and compensatory mechanisms are factors that influence the patient's level of resiliency (Hardin & Kaplow 2005:1).

Patients are assessed on a scale from level 1 to level 5 where the continuum ranges from level 1 to 5 and includes:

- o **Level 1 patients** indicate low resiliency.

- o **Level 3 patients** are moderately resilient, and able to mount a moderate response with some degree of compensation.
- o **Level 5 patients** are considered as being highly resilient.

Critically ill patients are characterised by possessing low resiliency and present in the acute phase of their illness with signs of bewilderment, sensory overload, and phobia. At this stage they need continuous assessment and pharmacological interventions. Patients who require intravenous sedation therapy for the control of anxiety and drug withdrawal are also regarded as patients with low resilience. The nurse-to-patient ratio is 1:1 for patients with low resiliency, high complexity, high vulnerability and unpredictability (Hartigan 2000; McKinley 2007:31; Brewer et al 2007:162).

- **Vulnerability**

The AACN Synergy Model for Patient Care defines vulnerability “as the susceptibility to actual or potential stressors that may adversely affect patient outcomes.” (AACN 2010; Arashin 2010:121; Hardin & Kaplow 2005:20). Patients are assessed on a scale from level 1 to level 5 where the continuum ranges from level 1 to 5 and includes:

- o **Level 1 patients** are highly vulnerable, susceptible, unprotected and fragile.
- o **Level 3 patients** are moderately vulnerable.
- o **Level 5 patients** feel safe and secure.

Families who require frequent support with complex teaching and ethical concerns such as considering terminating life support and/or their loved one to be an organ donor is regarded as highly vulnerable. Patients who are emotionally traumatised and need support from other services are also classified as highly vulnerable; with low resiliency, high complexity and minimal stability a 1:1 nurse-to-patient ratio is required (Hartigan 2000; McKinley 2007:31; Brewer et al 2007:162).

- **Stability**

Stability refers to the patients’ ability to maintain a stable state of equilibrium. The patient’s response to treatment has an impact on her or his stability (AACN 2010;

Arashin 2010:121; Hardin & Kaplow 2005:24). Patients are assessed on a scale from level 1 to level 5 where the continuum ranges from level 1 to 5 and includes:

- o **Level 1 patients** are unstable, unresponsive to treatment and have a high risk of death.
- o **Level 3 patients** are moderately stable and their response to treatment enables them to maintain a stable state for a limited time.
- o **Level 5 patients** are stable patients who have the desired response to treatment and have a low risk of death.

The set criteria to classify patients in a CCU as unstable and requiring 1:1 nurse-to-patient care (Hartigan 2000) are listed next.

- Patients who are haemodynamically compromised due to unstable cardiac rhythms require continuous assessment, pharmacological correction, and/or synchronised defibrillation of the rhythm, external pacing, and/or the placement of a temporary pacemaker.
- Patients who require immediate stabilisation of their blood pressure either because of a hypertensive or a hypotensive crisis.
- Patients with a symptomatic cardiac tamponade who requires immediate drainage and stabilisation.
- Patients with impaired myocardial perfusion progressing in decreased cardiac output and severe haemodynamic instability.
- Patients with symptomatic haemorrhage need immediate action.
- Post-cardiac arrest patients that remain compromised require ventilator and pharmacological support with continuous assessment and alterations.
- Patients in respiratory distress with dyspnoea, acute anxiety, orthopnoea, and diffuse pulmonary congestion who are highly complex and vulnerable and are in the acute phase of their illness.
- Patients who need placement of an intracranial pressure monitoring device and requiring continuous assessment and interventions.
- Patients with an acute alteration in neurologic status who need continuous assessment and intervention.
- Non-ventilated patients in respiratory distress with a compromised airway requiring continuous monitoring and frequent treatments.

- Patients in a metabolic crisis with multisystem compromise who require continuous assessment and intervention.
- Patients who have to leave the unit for procedures or tests and require continuous nursing monitoring and assessment for the duration of the test.

- **Complexity**

Complexity is defined by Arashin (2010:122) as “the complicated entanglement of two or more systems” where ‘systems’ refer to either the physiological or the psychological state of the body, the family dynamics, and the environmental interactions with the patient. Critically ill patients need their families’ support to limit physical and psychological stressors that may influence their complexity (AACN 2010; Arashin 2010:122; Kaplow 2003:28). Critically ill patients with multiple-organ dysfunction are complex and require high levels of care consistent with the patients’ acuity. It must further be recognised that one of the most emotionally challenging and complicated situations in a CCU is a family discussion surrounding the withdrawal and withholding of therapies (AACN 2010; Hardin & Kaplow 2005:28).

According to the AACN Synergy Model for Patient Care patients are assessed on a scale from level 1 to level 5 where the continuum ranges from level 1 to 5 and includes:

- o **Level 1 patients** are highly complex and difficult and have complex patient/family dynamics.
- o **Level 3 patients** have moderate patient/family dynamics.
- o **Level 5 patients** are uncomplicated, simple, have a clear-cut presentation, and have routine family dynamics.

Hartigan (2000) views the following patients as highly complex:

- Patients assigned to a research protocol which requires orientation into the study that necessitates documentation every 15 minutes or more frequently.
- Patients who require diagnostic or therapeutic tests involving conscious sedation and recovery.
- Management and preparation of patients who are regarded as potential organ donors.

- Severely compromised patients who require continuous arteriovenous haemofiltration.
- Mechanically ventilated patients in an acute phase of respiratory distress or the critical stage of acute lung injury with high Positive End Expiratory Pressure settings and high oxygen requirements.

- **Resource availability**

Resource availability refers to the technical, fiscal, personal, emotional, social, or supportive resources that patients, families or communities bring to the healthcare situation (AACN 2010). Numerous studies (Bauman, Foushee, Ennet, Pemberton, Hicks, King & Koch 2001:604; Gleeson-Kreig, Bernal & Woolley 2002:215; Rodrique, Pearman & Moreb 1999:241; Hardin & Kaplow 2005:34; Maeshima, Ueyoshi, Osawa, Ishida, Kunimoto, Shimamoto, Matsumoto & Yoshida 2003:456) describe the significant impact social support stability has on the survival of patients, adding that limited resource availability can influence a patient's recovery from a critical illness or event negatively.

According to the AACN Synergy Model for Patient Care patients are assessed on a scale from level 1 to level 5 where the continuum ranges from level 1 to 5 and includes:

- o **Level 1 patients** are those with only a few resources and no available skills or knowledge and with minimal emotional and social support.
- o **Level 3 patients** are considered to have moderate resources available. The patient's skills, knowledge, financial resources, emotional and social support are limited.
- o **Level 5 patients** have extensive skills, knowledge, emotional and social support and accessible financial resources (AACN 2010; Hardin & Kaplow 2005:34).

- **Participation in care**

The AACN Synergy Model for Patient Care defines participation in care as the extent to which patients and their families participate in care. In modern times patients are not merely passive recipients of care anymore. Their educational and cultural backgrounds

and the availability of resources have a great influence on the participation of patients and their families (AACN 2010; Hardin & Kaplow 2005:38,43).

According to the AACN Synergy Model for Patient Care, patients are assessed on a scale from level 1 to level 5 where the continuum ranges from level 1 to 5 and includes:

- o **Level 1 patients and their families** do not participate and have no desire to be part of the patient's care.
- o **Level 3 patients and their families** have moderate levels of participation; however, they are not well informed and ask advice from friends and neighbours in decision making.
- o **Level 5 patients and families** are well informed, make decisions for themselves and desire an active role in the patient's care (AACN 2010; Hardin & Kaplow 2005:38,43).

- **Participation in decision making**

According to the AACN Synergy Model for Patient Care, participation in decision making is the extent to which families and patients engage in decision making and in aspects of care (AACN 2010; Hardin & Kaplow 2005:45).

According to this model, patients are assessed on a scale from level 1 to level 5 where the continuum ranges from level 1 to 5 and includes:

- o **Level 1 patients and families** have no capacity for decision making and would need a delegate.
- o **Level 3 patients and families** have limited capacity for decision making and ask advice from others.
- o **Level 5 patients and families** join the healthcare team and partake actively in the decision making (AACN 2010; Hardin & Kaplow 2005:45).

- **Predictability**

According to the AACN Synergy Model for Patient Care, predictability allows one to expect a certain pathway from the patients. Based on knowledge and research of

certain disorders or procedures, the healthcare team predicts the patients' pathway and can implement preventative strategies to avoid complications; timed interventions lead to improved patient outcomes (AACN 2010; Arashin 2010:122; Hardin & Kaplow 2005:51).

According to the AACN Synergy Model for Patient Care patients are assessed on a scale from level 1 to level 5 where the continuum ranges from level 1 to 5 and includes:

- o **Level 1 patients** are not predictable, their outcomes are uncertain, and they have an uncommon illness with no or limited knowledge to use to predict the patient's trajectory.
- o **Level 3 patients** are moderately predictable.
- o **Level 5 patients** are highly predictable and patients follow an expected critical pathway (AACN 2010; Hardin & Kaplow 2005:51).

### **2.3.2 Nurses' competencies**

Nurses make a unique contribution to the patient outcomes, quality of care and containment of costs (AACN 2010). A nurse's competencies are an integration of her or his knowledge, skills, and experience essential for providing care to the critically ill patients and their families (Pacini 2004). The nursing profession's nonpareil contribution to patients within the healthcare environment is to create a safe passage for patients and their families. Nurses' competencies are clinical judgment, advocacy, caring practices, collaboration, systems thinking, response to diversity, clinical inquiry, and facilitation of learning. All eight mentioned competencies are essential for current practice but each competency has a higher or lower degree of importance according to every individual patient's acuity. The continuum ranges from one to five, where the level one nurses are competent and the level five nurses are experts (Kaplow & Reed 2008:19).

**Note:**

The **nurses' competencies** span along a skill-acquisition continuum. The continuum ranges from a novice at level 1 to an expert on level 5. Only level 1, level 3 and level 5 on this skill-acquisition continuum are discussed in the literature (AACN 2010; Brewer et al 2007:162; Kaplow & Hardin 2007:5; Kaplow & Reed 2008:19; McKinley 2007:31).

- **Clinical judgment**

The AACN Synergy Model for Patient Care indicate clinical judgment as clinical reasoning that includes decision making, critical thinking, and taking hold of a situation together with the nurses' skills acquired through a process of integrating education, experimental knowledge, and evidence-based guidelines. As nurses gain experience in practice, their clinical judgment develops and they rely less on the clinical judgment of others. The nursing process is considered as a logical and rational way for nurses to organise and manage care. If nurses follow the steps in the nursing process of assessment, planning, implementation and evaluation as a method for problem solving it will lead to appropriate clinical judgment. Clinical judgment is displayed when the nurses develop, implement and evaluate the research-based algorithms, decision trees, protocols, and care plans for patients and patient populations (AACN 2010; Arashin 2010:122; Hardin & Kaplow 2005:57).

To master the competency of clinical judgment the nurses have to meet certain learning objectives. Kaplow and Hardin (2007:123) set learning objectives for the cardiovascular and respiratory systems, neurology, gastrointestinal, endocrine, renal, and haematology to assist the nurse practitioners in developing their competency of clinical judgment. Kaplow and Hardin (2007:123) regard these systems as the systems that critical care nurses will work with most of the times. The learning objectives include the anatomy, physiology, assessment, particular monitoring, interventions, specific diseases, disorders, and syndromes involved with each system.

According to the AACN Synergy Model for Patient Care, nurses' competencies range from level 1 to 5 and include:

- o **Level 1 nurses** are advanced beginners in a time of active clinical learning with the focus on mastering technical skills. A level 1 nurse has the ability to gather and interpret basic data. His or her clinical decision making is limited and he or she relies on the clinical expert to guide them.
- o **Level 3 nurses** have the ability to organise. They have mastered a variety of technical skills. They can readily take care of usual and routine patients, but still seek guidance from the expert when confronted with complicated patients.
- o **Level 5 nurses** are regarded as experts. The expert nurses are able to synthesise and interpret multiple, often conflicting, sources of data. Expert nurses provide in the needs of the patients and their families and “respond in a fluid, almost flawless fashion” (AACN 2010; Arashin 2010:122; Hardin & Kaplow 2005:6).

Alfaro-LeFevre (2010:5) emphasises that using the nursing process promotes critical thinking. The characteristics in the nursing process of being purposeful, organised, systematic, humanistic, cyclic, dynamic, outcomes-focused, cost-effective, proactive, evidence-based, reflective, creative, and improvement orientated ensure that nurses deliver competent and efficient care.

- **Agency/advocacy**

The AACN Synergy Model for Patient Care defines advocacy as “the nurse working on the patients’ behalf and representing the concerns of the patient” (AACN 2010). Patients are often critically ill, vulnerable and out of action while their loved ones are shocked and worried by the magnitude of the situation. Advocacy is seen as a process that helps patients to access appropriate healthcare services (Arashin 2010:122; Hardin & Kaplow 2005:65, 68).

Nurses, patients and the families of patients are often confronted with the advances in science and medical technology that drives a cure to all illnesses and diseases versus a perception of dying as a natural event. Nurses have to advocate patients and their families when ethical dilemmas arise, such as when decisions have to be made to change from curative treatment to comfort care, and the withholding or withdrawal of life-sustaining treatment (Kaplow & Hardin 2007:719).

According to the AACN Synergy Model for Patient Care, nurses' competencies range from level 1 to 5 and include:

- o **Level 1 nurses** are competent and can act on behalf of patients. These nurses are aware of the rights and ethical conflicts of patients and engage in self-assessment of personal values. The level 1 nurse is guided by set principles and her or his personal values.
- o **Level 3 nurses** take the patients' values into consideration even if these values differ from their own. Level 3 nurses allow the patients and their families to represent them whenever possible. Level 3 nurses are able to refer patients and their families to internal resources when there is a complicated situation to deal with.
- o **Level 5 nurses** have the ability to advocate for patients, families and communities regardless of their personal values which may or may not be congruent with those of the patients or their families. Nurses use internal as well as external resources to solve ethical dilemmas which they are confronted with. Patients and their families are empowered by level 5 nurses to drive moral decision making through relationships with the nurses (AACN 2010; Arashin 2010:122; Hardin & Kaplow 2005:66).

- **Caring practices**

According to the AACN Synergy Model caring practices are collections of nursing activities in reaction to the individual needs of patients and their families. The intention of caring practices is to create a compassionate environment beneficial for healing that promotes comfort and the prevention of suffering (AACN 2010; Arashin 2010:122; Hardin & Kaplow 2005:71). Caring practices in CCUs, according to Kaplow and Hardin (2007:13), include family-focused care, a healing environment, the management of patients' pain and sleep disturbances, and the prevention and management of infection. According to the AACN Synergy Model for Patient Care, nurses' competencies range from level 1 to 5 and include:

- o **Level 1 nurses** provide in the basic needs of patients. The level 1 nurse ensures safe environments and her or his care is based on the policies and protocols of the healthcare unit.

- o **Level 3 nurses** reveal compassion and kindness based on the needs of patients and their families. Level 3 nurses support patients and their families when patients are dying.
- o **Level 5 nurses** develop a sense of awareness that allows them to interpret the patients' and families' needs and act accordingly. These level 5 nurses are fully engaged in providing the expected care and they ensure good communication which is conveyed with respect and dignity (AACN 2010; Arashin 2010:122; Hardin & Kaplow 2005:72).

- **Collaboration**

The AACN Synergy Model for Patient Care defines collaboration as the working with physicians, patients' families and healthcare providers to achieve optimal realistic patient outcomes. The healthcare team shares the responsibility for ensuring holistic and safe care for patients. An example of a multidisciplinary/collaborative team to ensure optimal outcomes for the critically ill patients and their families would be a team that includes physicians, nurses, physiotherapists, pharmacists, dieticians, anaesthesiologists, case managers, and clinical engineers (AACN 2010; Arashin 2010:122; Hardin & Kaplow 2005:76-77; Meeker 2008:e24).

Communication with mutual respect, understanding and trust in each other in the multidisciplinary/collaborative team is vital factors to ensure successful collaboration. Collaborative relationships are time dependent and can explain why healthcare units with a high nurse turnover rate are less successful. (AACN 2010; Arashin 2010:122; Hardin & Kaplow 2005:76).

According to the AACN Synergy Model for Patient Care, nurses' competencies range from level 1 to 5 and include:

- o **Level 1 nurses** are newly appointed nurses who participate in team meetings, share facts of the case, and seek clarification and enhanced understanding of the best practice in delivering patient care.
- o **Level 3 nurses** who have worked in their setting for a consistent time have the skills to identify that the patients and their families require a team to address their needs to ensure optimal outcomes.

- o **Level 5 nurses** are the advanced practice nurses who have evolved collaborative skills over a period of several years and they select the team members who will best facilitate patient outcomes through their prior experience and knowledge (AACN 2010; Arashin 2010:122; Hardin & Kaplow 2005:77).

- **Systems thinking**

An effective way to solve problems is through systems thinking. With systems thinking nurses view the problem holistically by looking at the structures, patterns and events of an issue and not only to the issue itself. Many problems in healthcare today are new and are not solved with old solutions but require new ones. According to the AACN Synergy Model for Patient care, systems thinking is a body of information and tools that empowers nurses to manage the environmental and system resources for patients, their families or members of staff within or across healthcare and non-healthcare systems (AACN 2010; Hardin & Kaplow 2005: 85). According to the AACN Synergy Model for Patient Care, nurses' competencies range from level 1 to 5 and include:

- o **Level 1 nurses** will view the problem from a narrow unit focus and are often uncertain how to solve problems. They will in many instances use previously learned strategies and standardised processes.
- o **Level 3 nurses** have gained experience over time and use resources within the healthcare system. A level 3 nurse takes the needs of patients and their families and the resources available for best practice in consideration when she or he negotiates.
- o **Level 5 nurses** utilise a variety of resources. They can predict the needs of patients and develop a variety of care strategies that are driven by the needs of patients and their families. Level 5 nurses are competent to navigate through the system and utilise systems thinking to the benefit of patients (AACN 2010; Hardin & Kaplow 2005: 86).

- **Response to diversity**

In culture specific care the healthcare providers engage patients as partners in care. Consequently, trust and rapport are enhanced through cultural negotiation and compromise. The characteristics of response to diversity include individuality, cultural

practices, spiritual beliefs, sex, race, ethnicity, disability, family configuration, life style, socioeconomic status, age, values, and alternative care practices (AACN 2010; Hardin & Kaplow 2005:94).

Complementary and alternative therapy has become increasingly popular and covers many modalities of treatment, for example, aromatherapy, reflexology, therapeutic touch, music and herbal therapy. Nurses have the responsibility to increase their knowledge base regarding these therapies to advise their patients accordingly since some herbal therapies, when combined with traditionally prescribed drugs, increase the risk of potentially life-threatening interactions (Kaplow & Hardin 2007:111).

According to the AACN Synergy Model for Patient Care, nurses' competencies range from level 1 to 5 and include:

- o **Level 1 nurses** provide care according to their own belief systems. Nurses on level 1 assess cultural diversity through a standardised questionnaire and are still in the process of learning about the culture of the healthcare environment and the functions of the organisation.
- o **Level 3 nurses** actively inquire about cultural differences and the individuality of the patient is considered in the patient's plan of care. Level 3 nurses educate patients and their families about the healthcare system and how to safely navigate the system.
- o **Level 5 nurses** respond to, predict and integrate cultural differences into the patients' and families' plan of care. They have the ability to negotiate and compromise with patients and their families the differing values between the healthcare system and the individual (AACN 2010; Hardin & Kaplow 2005:94).

- **Clinical inquiry**

Curley (2007:30) defines clinical inquiry as an on-going process of questioning and evaluating practice, providing informed practice, and innovating through research and experiential learning. Clinical inquiry is the systematic questioning of a clinical problem that requires a solution. Clinical inquiry is founded in evidence-based practice.

According to the AACN (2010), nurses should display knowledge seeking behaviours such as being open to advice, committed to life-long learning and seeking knowledge to

address clinical problems to reach the level of competency in clinical inquiry. The nurses have to identify clinical problems and conduct literature searches to validate or to change practice. The clinical experts have to be part of research projects to bring change in practice based upon evidence. According to the AACN Synergy Model for Patient Care, nurses' competencies range from level 1 to 5 and include:

- o **Level 1 nurses** are able to identify obvious changes in the patient's condition and to seek help to identify the problem. They recognise the need for further learning to improve patient care.
- o **Level 3 nurses** question the current practice and they ensure optimal outcomes for the patients by comparing possible alternatives and seeking advice, resources and information.
- o **Level 5 nurses** question current practice. They seek evidence in research literature and if the research does not reveal sufficient data they conduct a study to investigate the clinical situation. Based on the findings they will propose a change or changes in the policy and in current practice (AACN 2010; Hardin & Kaplow 2005:100).

- **Facilitator for learning**

The nurses facilitate learning for patients, families, nursing staff, physicians and other healthcare providers as well as the community through both formal and informal facilitation of learning. The patients' and families' strengths, weaknesses, and level of education must be considered in preparing their education plan. Facilitators need to be creative in their presentation method to enhance the understanding and comprehension of patients and their families. A learning culture encourages nurses to seek out opportunities to learn and to teach others (AACN 2010; Hardin & Kaplow 2005:6,103; Packard 2011:40).

According to the AACN Synergy Model for Patient Care, nurses' competencies range from level 1 to 5 and include:

- o **Level 1 nurses** do not involve patients in their educational plan. They follow planned education disease specifics and patients are passive recipients of information.

- o **Level 3 nurses** assess patients' readiness to learn and the patients' prior knowledge. They share information with patients and verify that patients understand the given information. The nurses and the patients set realistic goals based on the needs of the patients. They collaborate with patients, their families and other healthcare providers to ensure that the patients' educational needs are met. Realistic goals are set and patients understand the consequences of their choices if they do not adhere to the care plan.
- o **Level 5 nurses** creatively modify or develop patient/family education throughout delivery of care. They evaluate the patient's understanding by observing behaviour changes related to learning. Level 5 nurses are able to collaborate and incorporate all healthcare providers' plans as well as educational plans into the patient/family educational programme and set patient-driven goals for education. They advise the patients/families on the choices they have and negotiate the choices and its consequences in relation to the care plan. (AACN 2010; Hardin & Kaplow 2005:106; Packard 2011:41).

### **2.3.3 Characteristics of the environment**

The healthcare environment or system is the third component of the AACN Synergy Model for Patient Care. The healthcare environment or system acts as facilitator or medium to support patients' needs and has the power to promote the professional practice environment of nurses. Successful outcomes for both the patients and the nurses are reliant on the characteristics present in the healthcare system and the nurses' ability to create and support these environment characteristics (Kaplow & Hardin 2007:4).

The patient-nurse synergy will be less optimal and the realisation of the optimal outcomes will not occur if it is not supported by the environment (Good 2009:4; Kaplow & Reed 2008:22). The environment is an integral part of the AACN Synergy Model for Patient Care but, according to Kerfoot (2006:20), is often overlooked. Kerfoot (2006:20) notes that the nursing managers must be concerned about the quality of work life and also the quality of the professional practice environment built into the organisation. Kupperschmidt et al (2010) note that despite nurse leaders' efforts to create a healthy work environment for nurses the latter continues to resign and leave the profession.

Nurses are therefore challenged to intently and purposefully look inward and focus on what they have to do to create a healthy work environment for them and the patients.

The essential healthcare environment characteristics, according to the AACN (2005:1) are skilled communication, true collaboration, effective decision-making, appropriate staffing, meaningful recognition, and authentic leadership.

- **Skilled communication**

Communication is vital to deliver safe patient care; therefore, nurses must be as skilled in communication as they are clinically skilled. Skilled communication refers to a two-way communication method in which people think and decide together (AACN 2005:16; Lindeke & Sieckert 2005:1). According to Beyea (2004:1053), skilled communication between nurses and doctors is a key factor in both preventing medical errors and promoting a safe environment. As a pillar of the healthcare environment, skilled communication supports the ethical principle to seek a solution that preserves the nurse's professional integrity while simultaneously ensuring the patient's safety and best interest (AACN 2005:16). The AACN regard the following as critical elements to skilled communication:

- o The healthcare organisation provides support to team members through the provision of education programmes that develop critical communication skills including self-awareness, inquiry/dialogue, conflict management, negotiation and advocacy and listening.
- o Skilled communicators achieve desired outcomes by finding solutions.
- o Skilled communicators strive to enhance work and interpersonal relationships.
- o Skilled communicators invite and hear all relevant perspectives.
- o Mutual respect is fundamental to reach agreements.
- o Skilled communicators are an example of the congruency between words and actions and expect others to follow their example.
- o The healthcare organisation establishes zero-tolerance policies and enforces them to address and eliminate abuse and disrespectful behaviour in the workplace.

- o The healthcare organisation ensures that formal structures and processes are in place to provide effective information sharing among patients, families and the healthcare team.
- o Skilled communicators have access to appropriate communication technologies and are proficient in their use.
- o The healthcare organisation assesses the impact of communication on clinical, financial and work environment outcomes.
- o Skilled communication is a prerequisite to qualify for professional advancement.

- **True collaboration**

True collaboration is characterised by respect, hope, discovery of a common purpose, and the joy of doing good work (Gerardi & Fontaine 2007:13). Collaboration is proven to be related to nurses' job satisfaction, patient care errors, and the quality of patient care. If true collaboration is present the nurses' job satisfaction will be increased, there will be a decrease in patient care errors, and the quality of patient care will be improved (Disch, Beilman & Ingbar 2001:366; Larrabee, Ostrow, Withrow, Janney, Hobbs & Burant 2004:268).

Vollers, Hill, Roberts, Dambaugh and Brenner (2009:23) posit that true collaboration must be visible throughout the organisation: from the nurse to the patient and family, nurse with nurse, nurse with doctors and nurse with management. The critical elements for true collaboration, according to the AACN (2005:21), are as follows:

- o The healthcare organisation supports team members and encourages development of their collaboration skills through education opportunities.
- o The healthcare organisation creates a culture of collaboration, uses and evaluates processes that define each team member's accountability for collaboration and how unwillingness to collaborate will be addressed.
- o Free access to structured forums such as ethical committees; make time available to resolve differences among all critical participants including the patients, families and the healthcare team.
- o Every team member strives towards the common goal of true collaboration, mutual respect, conflict management and conflict resolutions in order to enhance optimal patient outcomes.

- o Every team member acts with a high level of personal integrity.
- o Team members are skilled communicators; an essential element of true collaboration.
- o Each team member demonstrates competence appropriate to his or her role and responsibilities.
- o In true collaboration, nurse managers and medical directors as role models are equal partners.

- **Effective decision making**

Mick (2011:391) states the decisions nurses make while caring for patients influence their effectiveness and have a great impact on patients' lives. Caring for critically ill patients requires a high level of critical thinking and clinical decision making abilities and a substantial knowledge base. According to the AACN (2005:24), an environment is healthy when nurses are valued and participate in decision making related to policies, clinical care, and leading organisational initiatives. The AACN regard the following as critical elements related to effective decision making:

- o Team members are supported and have the opportunity to develop themselves and improve their performance regarding a collaborative approach in goal setting, negotiation, facilitation, and conflict management.
- o Organisational values should be evident in team members' decision making processes.
- o Healthcare organisations involve patients and families in all decisions made related to the patients.
- o Individual team members are liable for decisions made on an accurate assessment of the situation by using their obtained skills in decision making.
- o The healthcare organisation must have structured systems in place to facilitate data-driven decisions.
- o Decision making processes include mutual respect and individual rights.
- o All made, delayed and wavering decision outcomes must be evaluated.

- **Appropriate staffing**

It is the stance of DeVandry and Cooper (2009:476) that the highest priority of healthcare organisations should be the enhancement of the employees' skills and knowledge for the benefit of the patients they serve. Valentine, Nash, Hughes and Douglas (2008:331) emphasise that a prerequisite for quality care is appropriate staffing. According to these authors, management are caught between cost savings and the need to ensure appropriate staffing. When the increased cost of appropriate staffing is debated it has to be in relation to the reduction in cost concerning the decreased LOS and occurrence of fewer adverse events. Kaplow and Reed (2008:23) add that the nurses' contribution to the organisation has to be acknowledged, rewarded and appreciated. According to the AACN (2005:28), healthcare organisations must have the following critical elements related to appropriate staffing in place:

- o Ethical principles which are the foundation of staffing policies. Nurses are ethically obliged to deliver the best possible patient care.
- o The involvement of nurses in all staffing processes and to be competent in addressing patients' needs and obtain optimal outcomes.
- o Formal evaluation processes in place to reflect on the patients' needs and the nurses' competencies and re-evaluation of action plans when optimal outcomes were not reached.
- o Facilitation of team members' staff management skills and improving these skills in reflection on outcomes.
- o Support systems to support nurses in delivering the required excellent care to patients and their families.
- o Involvement of nurses in the selection of the latest advanced technology to increase nurses' efficacy in obtaining optimal outcomes for patients.

- **Meaningful recognition**

David Thomas, an ethicist, made the following comment: "It is ethical to offer feedback to those from whom you or your organization receive services. It is unethical to allow outstanding performance to go unacknowledged just as it is unethical not to provide feedback to those whose performance or service threatens the optimal performance of you or your organization" (AACN 2005:33). Good (2009:17) observes that there are

basic requirements to prevent recognition losing value with individuals. Recognition must be sincere, timely and visible; it must not occur weeks after the event. Additionally, individuals appreciate recognition by supervisors and peers. With the current shortage of nurses, Good emphasises the importance to recognise nurses for their years of service. The AACN (2005:33) regards the following as critical elements related to meaningful recognition as a standard for a healthy work environment:

- o The healthcare organisation has a meaningful recognition system in place to ensure that all team members are valued for their contribution to the organisation's success.
- o The healthcare organisation follows a systematic process to teach all team members about the institution's recognition system on how to nominate peers for added value to the organisation.
- o The healthcare organisation recognises individuals from the bedside to the board table and at every stage of their professional career.
- o The healthcare organisation determines whether their recognition is meaningful and adjusts if needed, thus ensuring recognition that helps to sustain a healthy work environment.
- o Team members understand that meaningful recognition is a collaborative effort and a shared responsibility.

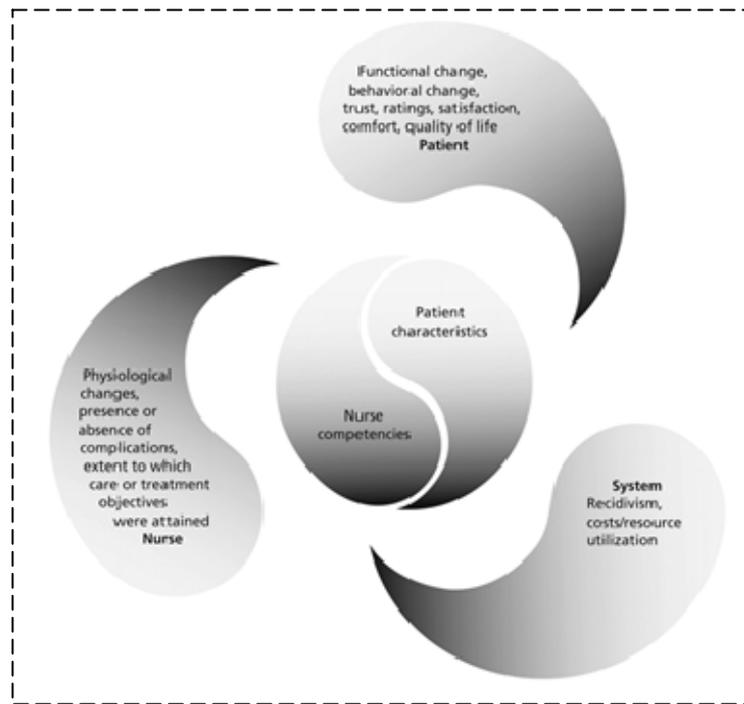
- **Authentic leadership**

Kerfoot (2006:16) views an authentic leader as a leader who inspires excellence, brings hope and love while demonstrating relationship-centred principles and is an inspiration to the workplace. McCauley (2005:2) identifies authentic leadership as the “glue that holds a healthy work environment together”. Gengler, Dorpat, Olson, Hendricks and Scheller (2009:20) highlight that strong nursing leadership is crucial to the success of creating a safe, healthy and collaborative work environment while Tulgan (2007:18) asserts that all persons perform better with guidance, direction and support from an experienced person. The organisational leaders must take the responsibility for establishing a synergistic environment where the shared mission is to build care around the needs of the patients (Kerfoot 2006:20). The AACN (2005:37) provides the following critical elements necessary for authentic leadership:

- o Nurse leaders must be educated and afforded the opportunity for continuous professional development related to skilled communication, effective decision making, true collaboration, meaningful recognition, and to ensure appropriate staffing.
- o Nurse leaders demonstrate an understanding of the match between the patients' needs and the nurses' competencies and envision a healthy work environment.
- o Nurse leaders inspire excellence in achieving the standards that create and sustain healthy work environments.
- o Nurse leaders accept the challenge to design systems necessary to effectively implement and sustain standards for healthy work environments.
- o The healthcare organisation positions the nurse leader so as to create and sustain the work environment through participation in key decision making in forums, access to essential information, and having the authority to make necessary decisions.
- o The healthcare organisation provides the necessary time, financial and human resources to support the efforts of nurse leaders to create and sustain a healthy work environment.
- o The healthcare organisation runs a formal co-mentoring programme and all nurse leaders participate.
- o Nurse leaders lead by example as regards skilled communication, true collaboration, effective decision making, meaningful recognition and authentic leadership.
- o The healthcare organisation appraises nurse leaders with regard to their leadership performance in creating and sustaining a healthy work environment and nurse leaders are advanced on these performances.
- o Nurse leaders and team members evaluate the impact of the leadership process and progress in creating and sustaining healthy work environments.

## **2.4 THE AACN SYNERGY MODEL FOR OPTIMAL OUTCOMES IN PATIENT CARE**

The AACN Synergy Model for Patient Care sketches three levels of outcomes: those derived from the patient, those derived from the nurse, and those derived from the healthcare system (Hardin & Kaplow 2005:5). Figure 2.1 depicts the three levels of outcomes as described in the AACN Synergy Model for Patient Care.



(Curley 1998 as cited in Curley 2007:26)

**Figure 2.1 AACN Synergy Model for Patient Care**

### 2.4.1 Outcomes derived from patients

The outcomes are patients' functional change and quality of life, their behaviour and knowledge, their levels of trust, ratings, satisfaction with care and comfort, (Hardin & Kaplow 2005:5,8).

- **Patient functional change and quality of life**

According to Curley (2007:35), the patient-perceived functional change and quality of life outcomes are multidisciplinary outcome measures. The nurses help the patients to manage through transitions of functional change and quality of life. Precise longitudinal measures are needed to measure the real change over time. Measurement over time will plot a curve of the patients' recovery.

- **Patient behaviour and knowledge**

Wolf and Greenhouse (2007:384) argue that since the patients of today are involved, intelligent and have easy and immediate access to information via the internet and they and their families want to be involved in decision making, planning and determining their

care. In support, Hardin and Kaplow (2005:43) add patients are not simply passive recipients of care anymore. Knowledge itself is not an outcome but the associated change in the patients' health behaviour is the outcome. In fact, as Curley (2007:15) observes, patients will not respond to information or adjust their health behaviour if they do not trust the nurses.

- **Levels of trust**

Rushton et al (2007:22) assert trust is pivotal in the nurse-patient relationship since trust ensures that the patient is cared for holistically. If trust does not exist it can lead to misunderstandings, a lack of cooperation, and also conflict. Curley (2007:1) states the patient is vulnerable and powerless; therefore, nurses' competence, skill and empathy in their care will result in trust. Incompetence has the adverse effect and trust as an outcome will not be optimised. To create trust the nurses and the patients have to know each other – the patients' needs and nurses' competencies have to match. Markey (2001:73) notes that in a case study where the AACN Synergy Model for Patient Care was applied, the patients' trust and confidence in their relationship with the nurses were vital components of ensuring the patients' safe passage.

When nurses develop a relationship with the families, trust develops between them and the families and the latter's stress and anxiety decrease. If nurses establish a trust relationship with the family of the patient it is easier to obtain the necessary information relevant to the patient's care and to involve the family in her or his care (Leon & Knapp 2008:255).

- **Ratings**

Rating includes the individual's assessment of fact, for example, the time one waits for services. The satisfaction and ratings by the individual and his or her family are subjective as they rate the care they received from a personal view point (Curley 2007:15).

- **Satisfaction with care and comfort**

Satisfaction measures include the querying of individuals about their expectations and the extent to which these expectations are met. The technical-professional factors, trusting relationships, and educational experiences are examples of phenomena that the individual and her or his family have to assess to express their satisfaction (Curley 2007:15).

#### **2.4.2 Outcomes derived from the nurses**

The outcomes derived from the nurses are the extent to which care objectives are met, the management of physiological changes, and the presence or absence of preventable complications and care and treatment objectives attained (Curley 2007:15; Hardin & Kaplow 2005:6,8).

- **Management of physiological changes**

The care of critically ill patients requires the critical care nurses' continuous alertness and quick interpretations of physiological changes in order to maximise any treatment the patients may need. When nurses are familiar with the patients they can predict, monitor and evaluate a trend in the patients' physiological changes (Curley 2007:35).

- **Managing the presence or absence of preventable complications**

To reach the optimal outcome in managing the presence or absence of preventable complications the nurses have to limit iatrogenic injury, infection, and the hazards of immobility, for example, pressure ulcers. The nurses' alertness and sound clinical judgment create a healing environment and a safe passage for the critically ill patients (Curley 2007:35).

- **Care and treatment objectives attained**

The extent to which the care and treatment goals are reached within the anticipated time period serves as an outcome variable. The nurses' collaboration with the multidisciplinary team is vital to ensure optimal patient outcomes (Curley 2007:35).

### **2.4.3 Outcomes derived from the healthcare environment/system**

Nurses play an important role and have an impact on the organisational transformation and success. In the absence of synergy a safe environment with optimal outcomes cannot be ensured (Kaplow & Hardin 2007:10). The goal of the healthcare system is to provide high quality of care at a moderate cost for the greatest number of people (Curley 2007:35). The outcomes of the healthcare environment include recidivism, healthcare costs and resource utilisation (Hardin & Kaplow 2005:8).

- **Recidivism**

Recidivism refers to the rehospitalisation or readmission of patients and is seen as rework that adds to the personal and financial burden of providing care. To minimise the patients' LOS and to track rehospitalisation and acute care visits assure that cost shifting is not occurring. The nurses play a vital role in decreasing the patients' LOS as they coordinate care, prevent complications, work according to a discharge plan, and refer the patients to the appropriate community resources (Kaplow & Hardin 2007:4).

- **Cost and resource utilisation**

Benner, Tanner and Chesla (1996:6) state cost-effective care is only possible in situations where the patients are known and continuity of care is ensured by expert caregivers. The clinical effectiveness in the healthcare system is tested by linking patients' outcomes to cost data. To survive economically, healthcare systems have to tighten resources but they are still obliged to maintain quality (Kaplow & Hardin 2007:4).

## **2.5 APPLICATION OF THE AACN SYNERGY MODEL FOR PATIENT CARE IN THIS STUDY**

The AACN Synergy Model for Patient Care evolved to link clinical practice in CCUs with patient outcomes. The principle is that positive outcomes will occur when the nurses' competencies and the patients' needs are in synergy provided that these needs and competencies are facilitated by a supportive healthcare environment (Kaplow & Hardin 2007:4).

Comments from healthcare practitioners made it clear that the AACN Model for Patient Care offers opportunities to create clinical excellence and obtain optimal outcomes for the patients, the nurses and the system.

The AACN Synergy Model for Patient Care was adapted and adopted for the CCU which is a unique environment within the private healthcare sector in the South African context. The adapted and adopted model was the road map on the journey towards enhancing synergy between the patients, nurses and the environment in a CCU in a selected private hospital in Gauteng. The hospital under study considered the patient as the centre of care, a standpoint which is supported by Good (2009:7) and the SANC (2004:17). The patients were viewed holistically and therefore the delivery of care focused on satisfying the patients' physiological, physical and psychological needs; this perspective is in line with the assumptions of the AACN Synergy Model for Patient Care (see Section 2.2.2). The patients' needs as utilised in this study are discussed in detail in Chapter 4, Section 4.3.

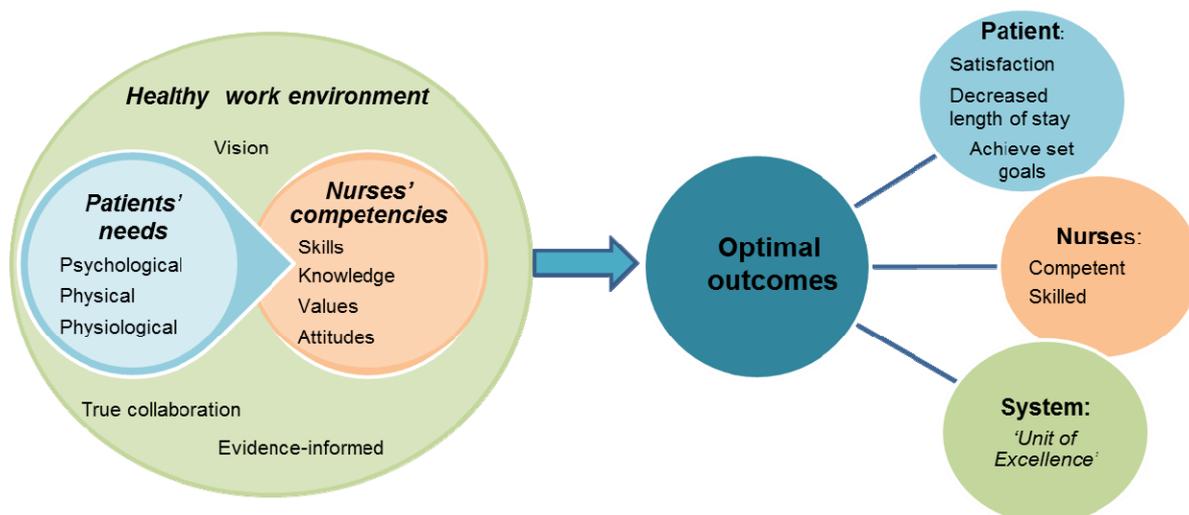
Similarly important, in the assumptions of the AACN Synergy Model for Patient Care, the families' needs are regarded as part of the patients' needs (see Section 2.2.2). Research also supports the importance of addressing the families' needs of critically ill patients in the CCU. Studies have shown that the experiences of the families emphasise the importance of support for the next of kin of patients who are hospitalised, especially when they are admitted to the CCU (Clark & Harrison 2001:61; Gonzales, Carroll, Elliot, Fitzgerald & Vallent 2004:194, Halm 2005:494; Molter 2009:156).

The nurses' competencies are driven by the needs of patients and their families. The nurses' competencies that were applicable to this study are discussed in detail in Chapter 5, Section 5.3.2. There was no previous explicit determination of the level of nurses' competencies in the specific CCU but, as discussed previously, the researcher and nurses acknowledged the importance of knowing the level of competency of every nurse to encourage synergy in an attempt to address the patients' needs.

The researcher and the nurses agreed that from their experience in practice the environment had a significant influence on their performance and on the patients' outcomes. Therefore, the characteristics of the environment and the nurses' competencies were regarded by the nurses of the selected CCU as a vital component to answer the patients' needs and enhance synergy in the CCU (Hardin & Kaplow 2005:8).

The CCU environment was assessed according to the six standards of the AACN's health work environment assessment tool (see Chapter 5, Section 5.5).

The nurses and the researcher aspired to measure the outcomes of the synergy between the patients' needs, the nurses' competencies and the characteristics of the environment at the patients' level, the nurses' level and the level of the system. The outcomes of the patients would be measured by relating it to their satisfaction and their length of stay. The outcomes related to the nurses' competencies would be measured by their level of competency and skills and the environment would be known as a '*Unit of Excellence*'. The application of the AACN Synergy Model for Patient Care is discussed in Chapter 6, Section 6.3.2. Figure 2.2 shows the adopted and adapted AACN Synergy Model as applied in this study.



**Figure 2.2** The adopted and adapted AACN Synergy Model for Patient Care

## 2.6 SUMMARY

In this chapter the AACN Synergy Model for Patient Care was thoroughly discussed. The positive comments recorded in literature by healthcare practitioners on the application of the AACN Synergy for Patient Care was given, followed by a discussion on the background to the development of the AACN Synergy Model for Patient Care, the assumptions and the key components of the model. The three components, namely, the patients' needs, the nurses' competencies and the characteristics of the environment were discussed in detail. The outcomes derived from the patients, the nurses and the environment were sketched as well as the adoption and adaption of the

AACN Synergy Model for Patient Care on the journey towards enhancing synergy in a CCU in Gauteng.

Chapter 3 focuses on the research methodology and design utilised in this study.

## CHAPTER 3

# RESEARCH METHODOLOGY AND DESIGN

“Go to the people, live among them, learn from them, work with them,  
plan with them, start with what they know, and build on what they have.”

(Stringer 2004:2)

### 3.1 INTRODUCTION

In Chapter 2 the theoretical framework for the study: *A collaborative approach towards enhancing synergy in a CCU in Gauteng* was discussed. This chapter addresses the research methodology and design followed in this study.

### 3.2 AIM AND OBJECTIVES

The aim of this study was to collaboratively enhance synergy in the selected CCU in Gauteng. To achieve this aim the objectives were set related to the cycles of the research on the journey towards enhancing synergy between the patients' need, the nurses' competencies and the characteristics of the environment. The objectives set for each of the cycles are listed below.

## PHASE 1: ASSESS SYNERGY

### **Cycle 1: Step1, Step 2 and Step 3: Assess synergy: Patients' needs**

- Objective 1: Assess patients' physiological and physical needs
- Objective 2: Assess patients' psychological needs
- Objective 3: Assess families' needs

**Cycle 2: Step 4: Assess synergy: Nurses' competencies**

- Objective 4: Assess nurses' competencies

**Cycle 3: Step 5: Assess synergy: Environment characteristics**

- Objective 5: Assess characteristics of the environment

## PHASE 2: TOWARDS SYNERGY

**Cycle 4: Step 6: Assess existing synergy in the CCU**

- Objective 6: Assess existing synergy in the CCU

**Cycle 4: Step 7: Objective 7:**

- Prioritise and plan action to enhance synergy in the CCU

**Cycle 4: Step 8: Objective 8:**

- Activate implementation of the planned actions in the CCU

**Cycle 4: Step 9: Objective 9:**

- Review the action plan

**Cycle 5: Step 10: Objective 10:**

- Activate implementation of the reviewed actions in the CCU

**Cycle 5: Step 11: Objective 11:**

- Re-assess the working environment

**Note:**

The study was not linear in nature. It was an evolving, intertwined, complex and dynamic project and at times cluttered and fast moving. To simplify the discussion of the methods used, the contents was broken down into smaller pieces (individual cycles and steps) and discussed in such a way as to provide the reader with insight into the journey towards collaboratively enhancing synergy in a CCU. Herr and Anderson's (2005:5) view concurs the systematic approach in which this study is reported.

### 3.3 RESEARCH METHODOLOGY

Research methodology refers to the techniques the researcher uses to structure the study. It includes using a set of orderly disciplined procedures to obtain information to reach the aim and objectives of a study (Hofstee 2006:112; Polit & Beck 2010:75). Action research, which is cyclic and collaborative, was used as the research methodology in this study (Stringer 2007:5; Zubert-Skerritt 2011:34, 55). Action research comprises all those who are involved in the phenomenon to systematically explore it and gain understanding and knowledge which, in the case of the current study, was to collaboratively improve synergy in the CCU. The researcher believed action research was an appropriate research methodology to this study because of its successes in facilitating change and improving healthcare. The researcher regarded action research as a methodology suitable in the CCU to enhance synergy between the patients' needs, the nurses' competencies and the characteristics of the environment.

It was found in literature that the use of action research as a suitable methodology to make a difference in the clinical practice is supported by various authors such as (Mahone, Farrel, Hinton, Johnson, Moody, Rifkin, Moore, Becker and Barker (2011) and Waterman, Marshall, Noble, Davies, Walshe, Sheaff and Elwyn (2007:373). According to Bradbury and Reason (2008:4), the practical knowledge obtained from action research is useful to people in the everyday conduct of their practice. This practical knowledge is used to bridge the gap between theory, practice and research (Holter & Schwartz-Barcott 1993:298-299; Zuber-Skerrit 2011:100).

Action research is a collaborative approach in research and the research study is conducted with and for people rather than on people. The researcher acts as a facilitator of change and the information is fed back to the participants during the research process for validation (Koshy et al 2011:10). Action research allows participants to be engaged as full persons and the research is based on their understanding of their own actions and experiences; therefore, it was regarded as the most opportune methodology for this study.

The nurses working in the CCU and the researcher working as a clinical facilitator in the CCU aspired to enhance synergy in the CCU in order to obtain optimal outcomes for the patients, their families, the nurses and the environment. For the nurses and the

researcher this was their journey towards having the CCU acknowledged as a '*Unit of Excellence*'.

As Bargal (2008:22) points out, acknowledging the nurses as equal partners in the research project and recognising their participation in the content and reasons for decisions ensure an ongoing high level of enthusiasm to participate. This, in turn, may enhance the ownership of the project as well as the outcome thereof (Stringer 2007:5). Next an overview of action research is provided with specific reference to definitions of action research, the characteristics, approaches and paradigms of action research, and the cycles followed in action research.

### 3.3.1 Definitions of action research

Kurt Lewin (1946:38) defines action research as a spiral of steps that proceeds from planning to action to observation and, finally, to reflection.

Kemmis and McTaggart (1988:5) describe action research a process of “collective, self-reflective inquiry undertaken by participants in social situations in order to improve the rationality and justice of their own social or educational practices, as well as their understanding of these practices and the situations in which these practices are carried out”. Although Kemmis and McTaggart’s definition relates to professionals working in the educational context, Waters-Adams (2006) comments that professional practice does not necessarily have to be situated in the educational area, but it can be in unrelated areas such as medicine or the social sciences.

In the mid-1980s Zuber-Skerritt (2011:35) developed a model and definition of action research called CRASP. According to the CRASP model, action research is: **Critical** (and self-critical) collaborative inquiry by **Reflective** practitioners, being **Accountable** and making the results of their inquiry public, **Self-evaluating** their practice, and engaged in **Participative** problem solving and continuing professional development (**CRASP**).

Reason and Bradbury (2001) as cited in Zuber-Skerritt (2011:37) define action research as a “participatory process concerned with practical knowing in the pursuit of worthwhile human purposes. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing

concern to people, and more generally the flourishing of individual persons and their communities”.

According to Bradbury-Huang (2010:93), action research represents “a transformative orientation to knowledge creation in those action researchers seek to take knowledge production beyond the gate-keeping of professional knowledge makers”. It is further defined by Glason, Chang and Bidewell (2008:34) as “a cyclical, participatory process of gaining evidence used to bring change to the workplace”.

- Application in this study

The interpretation of Stringer’s (2004:2) definition of action research, namely, to go to the “people, live among them, learn from them, work with them, plan with them, start with what they know, and build on what they have” was perceived to be appropriate to apply in the current study. The researcher started to interact with the nurses in their then current situation and, in alliance with them, followed the cyclic approach of **LOOK**, **THINK** and **ACT** to address the challenge to collaboratively enhance synergy in the CCU.

### **3.3.2 Characteristics of action research**

Although Bradbury-Huang (2010:934) reasons that action research contains a “family” of practices, Coghlan and Brannick (2010:5) and Greenwood and Levin (1998:6) concur for a research study to be classified as action research only three essential elements should be present namely, participation, action and research. A discussion of these three elements is presented next.

#### **3.3.2.1 Participation**

Action research begins with an interest in the problems of a group, a community, or an organisation. The intention with action research is to assist people on broadening their understanding of their situation and dealing with the problems confronting them (Coghlan & Brannick 2010:5; Stringer 2007:5). The participants have to be active in the research as well as in the change process (Koshy et al 2011:10).

According to Bradbury-Huang (2010:98), partnership and participation in action research refer to the quality of the relationships action researchers form with the primary stakeholders and the extent to which all stakeholders are appropriately involved in the design and assessment of inquiry and change.

Action research is research carried out by a team encompassing a professional action researcher or a research team and a practitioner or a group of practitioners seeking to improve their situation (Koshy et al 2011:10). The researcher and the participant build a relationship as co-researchers since it is believed that with a collaborative approach research is conducted **with** and **for** people rather than **on** people. The researcher acts as a facilitator of change and the information is fed back to the participants during the research for validation (Koshy et al 2011:10). In action research the participants are allowed to be engaged as full persons and the research is based on their understanding of their own actions and experience. As mentioned before, being equal partners in the research project and knowing the content and ground for decisions ensures an ongoing high level enthusiasm to participate (Bargal 2008:62).

Action research promotes broad participation in the research process and supports action leading to a more just or satisfying situation for the stakeholders (Greenwood & Levin 1998:4). According to Stringer (2007:33), professional practitioners become more aware of the view that an “army of experts” is unlikely to be able to meet people’s needs if the people themselves remain merely inactive recipients of services. Unless people come to understand procedures and practices by participating in their development, any programme or service is likely to have limited effect on their lives. Furthermore, if the nature of the research problem is embedded in the social environment then community members are engaged in the investigation. If the research problem is critical care service delivery oriented then critical care practitioners are involved in the inquiry. All the people whose lives are affected by the problem under study should be engaged in the process of investigation (Koshy et al 2011:2).

The role of the researcher is to guide practitioners to take ownership of their work and to bring change in their own work. The participants must be reassured of the researcher’s support on their journey of taking ownership of their own lives (Koshy et al 2011:41; Stringer 2007:32).

### **3.3.2.2 Action-based**

Although the action component is attended to in all the action research schools, it is a prominent feature in the work of Lewin. In an action research project the first priority is to solve the problem and only then the generation of knowledge. The intent of action research is not to generate knowledge for knowledge's sake, but to generate knowledge which will enable the action researcher to solve the problems in practice. However, action and knowledge cannot be seen independently, as action creates knowledge and the analyses of that knowledge may lead to improved action. By involving the people in gathering of information, knowledge production brings action and actions are identified, tested and then tried again (Bradbury & Reason 2008:181). Stringer (2007:9) adds that the participants are continuously exploring the details of their activities through a constant process of observation, reflection and action. People will find themselves working backward through the practices; repeating processes, revising policies, rethinking interpretations, leapfrogging steps or stages and sometimes making major changes in directions.

### **3.3.2.3 Research**

Action research is primarily a qualitative research design but includes quantitative methods to gather information. In a qualitative research design the researcher's goal is to clarify and understand a question, problem or an issue (Coghlan & Brannick 2010:5).

Action research is both a research design and a learning process for those who are involved. Action research enables health professionals or community members who have not been practically engaged in research, to become involved and learn about research. The researcher in return enhances her or his knowledge and experience of the research process and learns about the particular area being studied (Coghlan & Brannick 2010:5).

- Application in this study

In this action research study project the nurses and the researcher were on a collaborative journey towards enhancing synergy in the CCU. The nurses were involved

as co-researchers and followed the 4th and 5th cycles of LOOK, THINK and ACT with the researcher to enhance synergy in the CCU.

### **3.3.3 Approaches in action research**

In action research different approaches are used. Holter and Schwartz-Barcott (1993:298) differentiate between the technical collaborative, the mutual collaborative, and enhancement approaches.

#### **3.3.3.1 *Technical collaborative approach***

In this approach the researcher pre-plans the research within a pre-specified framework and theory. The researcher is a professional expert who carries out the research with the practitioners, directs action, and acts as facilitator. This approach is seldom qualitative (Holloway & Wheeler 2010:240; Holter & Schwartz-Barcott 1993:298).

#### **3.3.3.2 *Mutual collaborative approach***

The researcher and the participants work collaboratively to identify a problem and formulate a plan of action. They work together as co-researchers to implement the change. This approach leads to theory development rather than making use of a pre-specified theory. This approach has been developed to resolve immediate problems in practice and needs quick decision making (Holloway & Wheeler 2010:240; Holter & Schwartz-Barcott 1993:298).

#### **3.3.3.3 *Enhancement approach***

The aim of the enhancement approach is to empower and emancipate the practitioners to identify and solve problems. Continuing with the action research cycle is not dependent on the researcher as the practitioners close the gap between theory and practice (Holloway & Wheeler 2010:240; Holter & Schwartz-Barcott 1993:298).

- Application in this study

In this study the technical collaborative approach was utilised. In this approach the researcher has to be a professional expert who carries out the research. Both Dreyfus and Dreyfus and Benner projected that it takes almost five years to move through the five stages from novice to expert but also explained that not all novices become experts (Kaminski 2011:1). With 28 years' experience in critical care nursing, the researcher is regarded as a professional expert (see Annexure M on CD for the curriculum vitae of the researcher). The researcher introduced the AACN Synergy Model for Patient Care to the nurses working in a CCU and embarked on a journey towards enhancing synergy in the CCU. The researcher directed the action and acted as facilitator to plan the way forward.

### **3.3.4 Paradigms in action research**

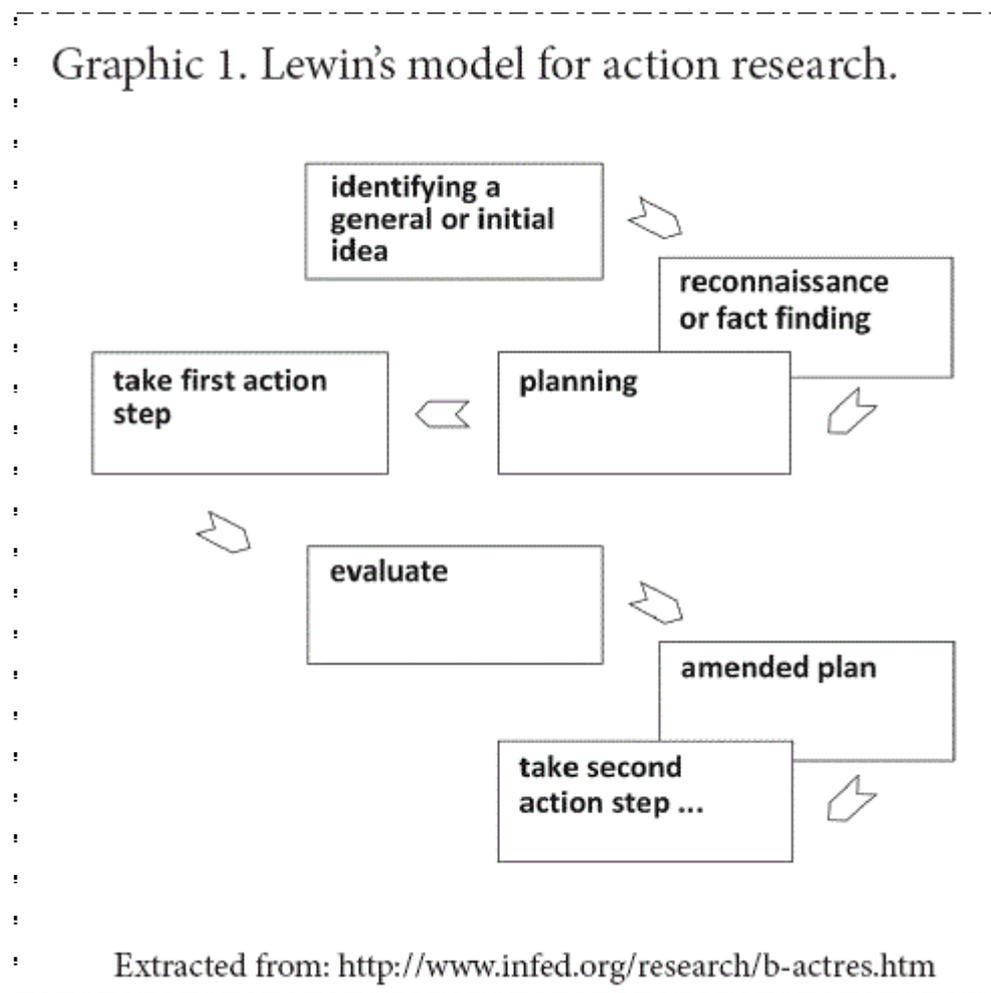
Action research has two main paradigms, namely, pragmatic and critical. The pragmatic paradigm is appropriate for contexts where collaborative and immediate action is needed, whereas the critical paradigm is appropriate where transformative action needs to be preceded by critical thinking and reflection (Johansson & Lindhult 2008:95). This study was conducted from the critical theorists' paradigm. The critical paradigm was appropriate as the aim of the research was to enhance synergy in a CCU. The transformative actions were preceded by critical thinking and reflection as suggested by Johansson and Lindhult (2008:95). The participants in this study participated and were actively involved in implementing the formulated plan in order to enhance synergy in a CCU as supported by Koshy et al (2011:13). The nurses developed their own knowledge and confidence through reflecting on their everyday practices that is emphasised by Stringer (2007:140-141).

### **3.3.5 Cycles of action research**

Researchers Kurt Lewin and Kemmis and McTaggart (2000:567) follow a cycle of plan, act, observe and reflect for action research while Stringer (2007:8) prefers a routine of **LOOK, THINK** and **ACT**. Nevertheless, these researchers all agree that action research is a cyclic approach and results in a never-ending cycle of plan, act, observe and reflect.

### 3.3.5.1 Kurt Lewin's spiral framework

Lewin's spiral methodology entails a first phase of planning or fact finding leading to a "diagnosis". The second phase involves the "experimental phase" where the strategic plan is implemented. The third phase follows by evaluating the results of the implemented plan and the fourth phase includes reflection, re-planning and "re-spiral". Lewin encourages researchers to repeat the cycles so that the experience gained in the evaluation phase can be used to adjust the strategic plan (Lewin 1946 in Beltran 2009). Figure 3.1 depicts Lewin's model for action research.



(Beltran 2009)

**Figure 3.1: Lewin's model for action research**

### 3.3.5.2 Kemmis and McTaggart's action research cycles

Kemmis and McTaggart (2000:595) refined the action research cycles of Kurt Lewin. In their cycle action research became participatory and a cyclic spiral of self-reflection as indicated below:

- planning a change
- acting and observing the process and the consequences of the change
- reflecting on these processes and consequences and then replanning
- acting and observing
- reflecting
- and so on in a continuous cycle.

In the view of Koshy et al (2011:6) and Zuber-Skerritt (2011:33), the action research spiral of Kemmis and McTaggart is not a linear and rigid process in practice, but dynamic and open and the cycles may sometimes overlap.

- o Planning

In the planning phase the problem is identified and an analysis of the context is done. The planning phase also includes the formulation of a strategic plan to initiate the desired change (Koshy 2010:4; Zuber-Skerritt 2011:33).

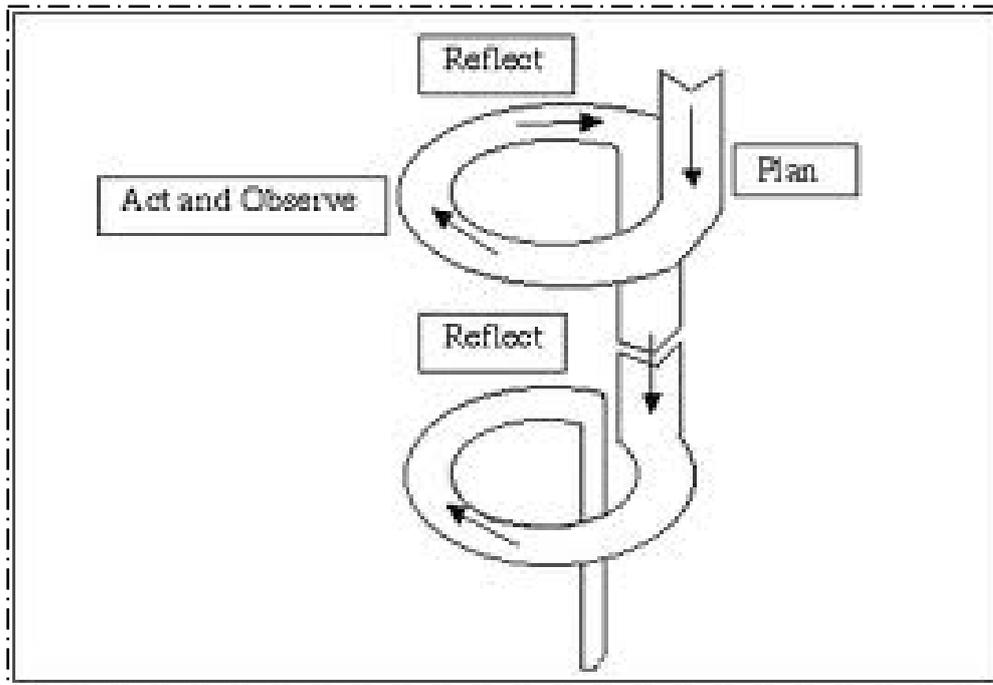
- o Acting and observing

In the acting and observing phase the formulated plan is implemented. The implementation of the formulated plan is monitored by feedback and evaluation of the results (Koshy 2010:4; Zuber-Skerritt 2011:33).

- o Reflecting

The researcher and co-researchers critically reflect on the obtained results and may change the original plan to continue with the next cycle of planning, acting and observing, and reflecting (Koshy 2010:4; Zuber-Skerritt 2011:33).

Figure 3.2 depicts the action research spiral of Kemmis and McTaggart.

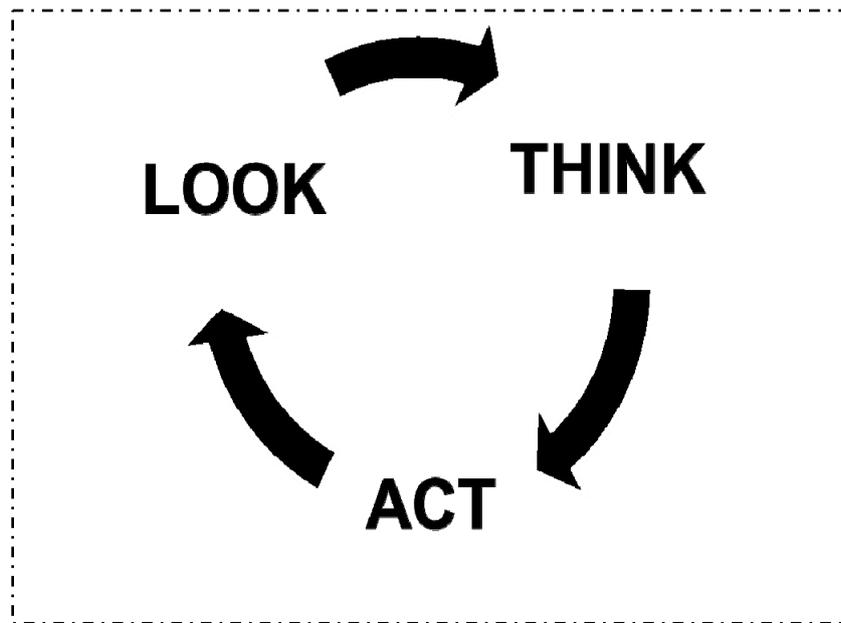


(Kemmis & McTaggart 1988:7)

**Figure 3.2: Kemmis and McTaggart's action research spiral**

### 3.3.5.3 *Stringer's action research cycle*

For the purpose of the current study Stringer's (2007:8) view of the action research cycle, namely, the routine of LOOK, THINK and ACT which is depicted in Figure 3.3 was used. Phase 1 of the current study consisted of three incomplete cycles of LOOK and THINK and the beginning of Cycle 4, the first complete cycle in this study. Before the nurses and the researcher could begin the collaborative journey towards enhancing synergy in the CCU, the researcher had to LOOK and THINK about the existing synergy in the CCU. Therefore, Cycle 1 to Cycle 3 focused on assessing the three components in the AACN Synergy Model for Patient Care, namely, the patient, the nurse and the environment.



(Stringer 2008:37)

**Figure 3.3: Stringer's routine of LOOK, THINK, and ACT**

- LOOK in the action research cycle

The main purpose of the LOOK stage is to gather relevant data to support the participants in building a picture and describe the situation that leads to an extended and clarified understanding of the issue (Stringer 2004:13). The LOOK stage is mainly qualitative in nature because the data have to reveal the reality of the peoples' daily experiences, assumptions, views and beliefs. The information is gathered to identify a broad problem in a work environment and questions are raised about the problem.

The participants have the opportunity to describe the nature of the problem. This input is the subjective experience of the participants and the time to try and understand what is going on, both above and below the surface (Holloway & Wheeler 2010:241; Koshy et al 2011:79). Moreover, the researcher has to be very careful to ensure that the gathered data are pure and not contaminated with the researcher's perspectives, biases or experiences of the situation. The input from the participants as experts of their own needs and experiences becomes a process of co-learning, where the researcher and the participants share their experiences (Tappen 2011:81).

Problems do not exist in isolation but are part of a complex network of events, activities, perceptions, beliefs, values, routines and rules. As the participants are allowed to reveal

relevant details of their situation and share their experiences they gain greater insight into their situation and more accurate data are obtained (Tappen 2011:81).

In PHASE 1: Cycle 1: Step 1 the researcher LOOKED quantitatively at the patients' physiological and physical needs. A document analysis was conducted to assess the patients' physiological and physical needs in a selected CCU. In Cycle 1: Step 2 the patients' psychological needs were assessed qualitatively with open-ended interviews.

The families' needs were assessed qualitatively in Cycle 1: Step 3 to complete the picture of the patient in the CCU. The family is important and significant to the patient and the constant in the patients' life (Kaplow & Hardin 2007:37). The researcher LOOKED at the families' needs by making use of open-ended interviews to assess the families' needs related to their experience of having a family member in the CCU.

In Cycle 2: Step 4 the researcher LOOKED at the nurses' competencies quantitatively. For the purpose of this study the competencies of nurses working in the CCU were assessed against the needs of the patients obtained in Cycle 1. Competency checklists were obtained from the training and education department in the private hospital in Gauteng to assess the determined patient needs.

In Cycle 3: Step 5 the picture of the characteristics of the CCU environment was obtained quantitatively from the nurses working in the CCU. The nurses LOOKED at the environment by submitting an electronic completed AACN healthy work environment questionnaire to the AACN.

In Cycle 4: Step 6 the researcher in collaboration with a statistician LOOKED at the assessed data from the patients' needs, the data collected from the nurses' competencies and the characteristics of the environment to determine the synergy that existed in the CCU at the time the study was conducted. With the revision of the plan in Cycle 4 the cycle of action research repeats itself again in Cycle 5.

- THINK in the action research cycle

During the THINK stage the goal of the researcher and the participants is to explore, describe and analyse the gathered information, to recognise key concepts and elements of participants experiences, and furthermore to enable participants to get greater insight in the “what is happening?” (Stringer 2004:14; 2007:124). Health professionals are familiar with making a clinical diagnosis. However, in action research making a diagnosis requires to formulate a problem statement that results from the broad problem that has been identified in practice. In other words, a specific problem statement is developed that defines the research problem and sets a focus for the research.

To develop the problem statement, two processes provide meaning to the collected data. The first is to categorise and code the data in units of meaning and organise them into a set of categories that review the experiences and perceptions of the participants. In the process of categorising and coding the collected data are reviewed, unitised, categorised and coded. Themes are identified, a category system is organised, and a report framework is developed. In the second analysing process, key experiences are identified from the gathered data. Researchers may follow either or both of these processes to ensure proper understanding of the situation. The researcher deepens the analysis by adding information from other stakeholders and data sources in an attempt to ensure participants have insight into their situation (Stringer 2004:14; 2007:124).

In healthcare evidenced-informed literature is used to analyse the key experiences. This process is followed to make sure that all the gathered data will contribute to the solution of the problem. The researcher, as facilitator, must help the participants to simplify and unravel their meanings and actions and frame it in terms that participants use in their everyday lives (Holloway & Wheeler 2010:241; Stringer 2007:96-97). It is imperative that the participants and the researcher listen to the various perspectives and analyse the situation before jumping to a final problem statement.

The greatest value of the analysis process lies in the power of new data and insight that were gained for informing future actions thus providing benefits for practice. Further value is added when these results and insight are used to change or make adjustments to the mode of practice and generate new operative theories of action (Sagor 2011:163).

In Cycle 1: Step 1 THINKING was applied when the data obtained from the document analysis related to the physiological and physical needs of the patients were pondered on. The data analysis was carried out by a statistician using SAS software. (see Chapter 4, Section 4.4.1)

In Cycle 1: Step 2 the researcher collaborated with an experienced coder to THINK about the data obtained from the patients by conducting open-ended interviews. (see Chapter 4, Section 4.4.2).

In Cycle 1: Step 3 the researcher and an experienced coder THOUGHT about the collected data from the open-ended interviews with the families who had a family member in the CCU. (see Chapter 4, Section 4.5).

The THINK in Cycle 2: Step 4 was associated with the data collected from the competency checklists and was done with the help of a statistician. It is discussed in detail in Chapter 5, Section 5.3. The THINK in Cycle 3: Step 5 with regard to the characteristics of the environment was done by the AACN. (see Chapter 5, Section 5.5).

In Cycle 4: Step 6 THINKING about the existing synergy in the CCU was done by means of an inspection of the results of Cycles 1, 2 and 3. THINK in Cycle 5 was the result of the never-ending cycle of LOOK, THINK, and ACT.

- ACT in the action research cycle

During the ACT stage the researcher and participants plan actions and describe in detail the things to be done to solve the problem and ensure a desired outcome. Participants work creatively to identify what and how they will resolve the problematic features practically. This stage has three phases: planning, implementing and reviewing (Stringer 2004:16)

- o Planning phase

In the planning phase the researcher does not provide the participants with a guideline or outline to follow. The participants have to set priorities and define the tasks that are needed to formulate a plan of action (Holloway & Wheeler 2010:241). It is important to remember that if the formulated plan “makes sense” to the participants and they see it as purposeful and productive, they will accept ownership and invest energy and time to make a success of the project. When the priorities have been set, every aspect or issue has to be addressed. The developed plan has to include the goal, the steps of the tasks, the responsible persons, the place, the timeline, and the resources needed. Outcome statements must also be prepared. These statements describe what is actually going to be done and what is the planned date of completion.

The plan of action should be recorded on an information board for all to get a clear picture of their strategy and their goals (Koshy et al 2011:81). In an action research conducted by Glason et al (2008:36) the researchers presented the content on a wall chart and the process summary was continually accessible to all the participants. The wall chart explained each step and at a glance the clinical nurse could locate the next step in the action research cycle.

The planning ends when every participant has had the chance to discuss his or her tasks and activities and check it against the criteria for the well-being of people. The criteria for the well-being of people enhances people’s pride, dignity, identity, responsibility, unity, feelings of control, and allowing people to perform the tasks in places and locations where they feel at ease. The researcher also has to check whether all the action plans encourage relationships, participation, and communication. It is time well spent to do this check because it ensures minimum delays and obstacles (Stringer 2007:128-133).

- o Implementing phase

During the implementing phase the formulated plan is implemented. Participants usually realise and also experience in this phase that although what has been said and planned seemed facile at the time, great effort is required to complete tasks and stay inspired. The fact is that this is the stage where co-researchers are confronted with the reality of

daily life and being back in the family, work and community context they need emotional and organisational support to keep them focused and motivated. The implementation is easier when the majorities of the people affected by the research project is included in the LOOK and THINK phases (Stringer 2007:134-139).

Furthermore, the researcher has to give support to ensure the prompt and timely completion of tasks. Such support is given through frequent communication and affirmation of the co-researchers' competence and worth. When visiting the participants the researcher asks questions to help the participants review their tasks. Questions help the participants to reflect on their relationships, patterns of work, communication, difficulties, solutions, and progress of the research activities. The researcher has to assist the participants with activities when needed; it is vital that the researcher takes great care not to do the tasks for them but with them (Koshy et al 2011:81-82).

Equally important is that it is expected of the researcher to manage conflict if it arises since proper resolution of conflict is essential to uphold positive work relations. The establishing of a support network is seen as the key to the success of an action research project. The participants support each other and the researcher (with a broader view) links participants with significant others. A supportive network offers emotional as well as social support and provides opportunities for exchange, discussions and consultation (Stringer 2007:134-139).

- o Reviewing phase

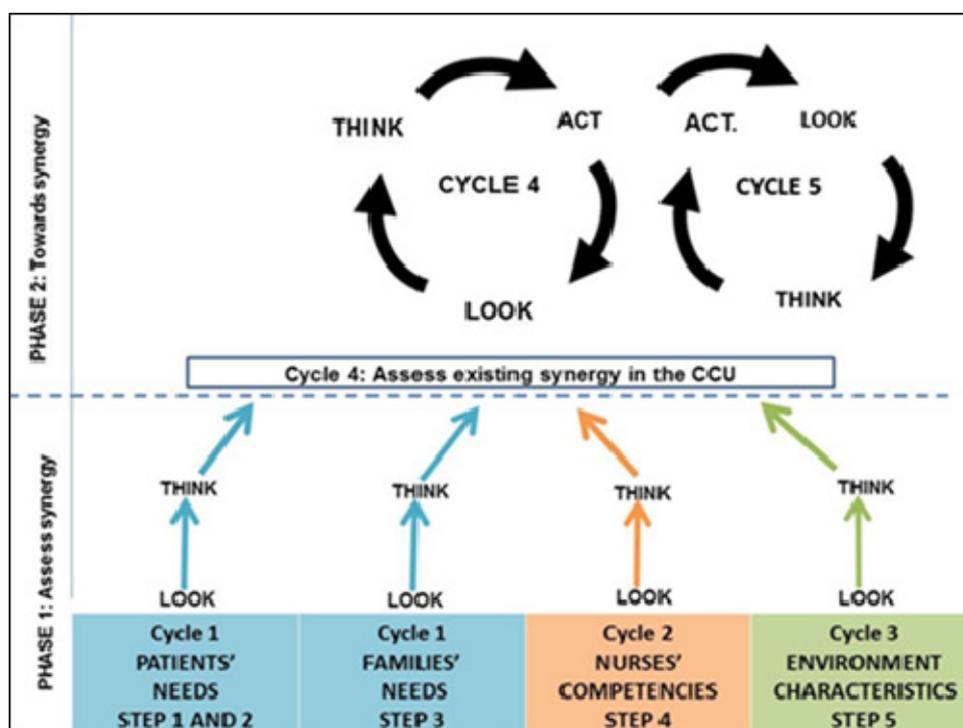
In the reviewing phase the participants review their progress of the formulated plan. They must meet frequently because it is during these meetings that they have the opportunity to review the plan, report the progress, modify sections, and to celebrate successes. With the revision of the plan the cycle of action research repeats itself again. The participants are in an ongoing process of LOOK, THINK, and ACT. In a study conducted by Glason et al (2008:37) this LOOK, THINK and ACT process was facilitated by encouraging and guiding the nurses to reflect on their ward practices.

In action research participants develop their own knowledge and confidence through reflecting on their everyday practices. The issues that are solved are celebrated and the unresolved issues become subject to continued action (Koshy et al 2011:83; Stringer 2007:140-141).

In Cycle 4: Step 7 the nurses and the researcher collaboratively prioritised and planned actions towards enhancing synergy in the CCU (see Chapter 6, Section 6.2.3). The action plan was planned and prioritised in a focus group.

In Cycle 4: Step 8 the formulated plan was activated by the nurses and the researcher. The plan was reviewed by the nurses and the researcher in Cycle 4: Step 9. By reviewing the action plan, the LOOK of the next cycle, Cycle 5, was initiated.

Figure 3.4 illustrates the application of the routine of LOOK, THINK and ACT in this study. As illustrated in Figure 3.4 the researcher put a full stop at the ACT of Cycle 5 to show it indicated the end of the never-ending cycle of LOOK, THINK and ACT that was needed for the purpose of this particular study.



**Figure 3.4:** The application of the routine of LOOK, THINK and ACT in this study

### 3.4 RESEARCH DESIGN AND METHODS

Singh (2006:77) states the research design is the “mapping strategy of research and it is the work before getting the project underway”. Gerrish and Lacey (2006:20) describe the research design as the most important step of the research process as it influences

the kind of data collected, types of analyses that are possible, and the way in which the results can be applied to practice.

The design identifies how participants will be recruited and included into the study; what will happen during the study which includes the timing of any treatments and measures; and when the study will end (Tappen 2011:3). The two overall purposes of selecting a research design are to plan an approach that will best answer the research questions and will ensure the rigor and validity of the results (Macnee & McCabe 2008:195).

In this study an explorative, descriptive, contextual, qualitative and quantitative design were applied to formulate, plan and implement the research to attain the specific research objectives.

The action research cycles the researcher followed was Stringer's (2008:37) routine of LOOK, THINK and ACT and was used to guide the discussion on the research methods. The study consisted of two phases. In the first phase the synergy that existed in the CCU at the time the study was conducted was assessed and the second phase consisted of the nurses' and the researcher's journey towards enhancing synergy in the CCU.

**Note:**

In the first phase, the three cycles were incomplete and included the LOOK and THINK of the patients' needs, the nurses' competencies and the characteristics of the environment (see Figure 3.4). The LOOK in Cycle 4 ended Phase 1 and Phase 2 continued with the THINK in Cycle 4. The complete routine of LOOK, THINK and ACT was followed in Cycle 4 and Cycle 5. For the purpose of this study, the researcher concluded with ACT in Cycle 5.

### **3.4.1 Explorative design**

According to Gratton and Jones (2010:6), explorative research takes place when the phenomena is not well known and there is a need for an initial exploration of the phenomena before more specific research can be conducted. Babbie (2010:9) describes explorative research as a valuable way to yield new insights into a topic for research. The assessment of the needs of the patients and their families, the

assessment of the nurses' competencies, and the assessment of the characteristics of the environment yielded new insights about the synergy that existed in a CCU in a private hospital in Gauteng. The researcher explored and analysed the gathered information to recognise key concepts and elements of the patients' needs and families' experiences, the nurses' competencies, and the characteristics of the environment.

### **3.4.2 Descriptive design**

In descriptive research the situation, a phenomenon, and events are observed by the researcher who focuses on what is happening or how much has happened rather than why it is occurring. The researcher has no intent to explain the results but only to report what he or she observes (Babbie 2010:93; Gratton & Jones 2010:7). The nurses and the researcher's intent were to assess the patients' needs, the nurses' competencies and the characteristics of the environment in the selected CCU in order to enhance synergy between the patient, the nurse and the environment. Descriptive designs can vary from simple to complex.

In a simple descriptive design data are gathered from one group or phenomenon in contrast with a complex descriptive design where the number of groups or observations may be increased. Associations and comparisons can be made in complex descriptive designs but there is no manipulation by the researcher (Tappen 2011:69; Keele 2011:38-39). According to Keele (2011:38), the answer to the question, "What is this?" is best answered with a descriptive design.

In this study the researcher wanted to assess the existing synergy in a CCU to collaboratively enhance synergy in the CCU.

### **3.4.3 Contextual design**

The context of the research includes the environment and the conditions in which the study is conducted as well as the culture of the participants and the location. In a contextual design the researcher's intent is to study the actual contexts of the participants' experiences (Holloway & Wheeler 2010:41). According to Polit and Beck (2008:57), data collection can be done in a variety of research settings.

Qualitative researchers are deeply interested in “the real world” of the participants and therefore the research is conducted in the natural settings in which participants live and work (Holloway & Wheeler 2010:41). Polit and Beck (2008:699) state the research report has to include a detailed description of the research setting in order for the readers to assess the transferability of findings.

In this study a CCU in a private hospital in Gauteng, a province in the RSA, was selected as the research site. The selected CCU was the “natural setting” for the critically ill patients, their families and the nurses. An overview of this study is discussed in Chapter 1, Section 1.2.1.

#### **3.4.4 Qualitative design**

Qualitative designs originate from the hermeneutic or interpretivist paradigm and underline the ability of human beings to construct and understand their lives in their own “real” world. The purpose of qualitative designs is to study the people’s subjective experience related to an issue or problem (Koshy et al 2011:12; Stringer 2008:22; Williamson et al 2012:32). In a qualitative design an inductive approach is used and data is collected using interviews, meetings, reflective diaries or field notes, and focus groups (Stringer 2007:68; Koshy 2010:87; Koshy et al 2011:108).

**Interviews** are conducted to gather richer and more informative data than information that has been obtained from a questionnaire. Interviews can be structured, semi-structured or open-ended. In structured interviews the interviewer asks only predetermined questions. In semi-structured interviews, the researcher prepares a set and a subset of questions which can be used to probe for further ideas or more details related to an issue that may need further elaboration or clarification. In an open-ended interview only open-ended questions are asked (Koshy 2010:87; Teddlie & Tashakkori 2009:229). According to Koshy (2010:87), the researcher should get different responses with useful data.

In this study the researcher utilised an open-ended interview which is discussed in detail.

Stringer (2007:69) describes interviewing as follows: “A reflective process that enables the interviewee to explore his or her experiences in detail and to reveal the many features of that experiences that have an effect on the issue under investigation.”

The aim of interviews was to understand the patients’ viewpoints and experiences in the CCU and not to make generalisations about their behaviour (Baumbusch 2010:255; Horton, Macve & Struyven 2004:339; Sociological Research Skills [Sa]).

Whiting (2008:35) states nurses have to develop their interview skills before they conduct an open-ended interview. The researcher conducted the interviews as the nurses expressed they were not experienced enough in interviewing the patients for research purposes and they also did not have time to conduct the interviews. The nurses were encouraged to do on-the-spot interviews when they intervene with the patients. The researcher followed the process as suggested by Baumbusch (2010:255) and Whiting (2008:35).

The process entailed to identify a “good informant” to obtain information that was relevant to the study. The traits of the “good informant” included the following patients:

- they had to be have been in the CCU for longer than 24 hours, making them “the experts” about their psychological experience of being in the CCU
- they had to be awake with a GCS scale of 15/15 and had to have score zero on the Richmond agitation-sedation scale

they had to be willing to participate in the interview. This was confirmed with the consent obtained from the patient (Holloway & Wheeler 2010:89; Whiting 2008:36).

The researcher prepared for the interview. She compiled a checklist in preparation for the interview and to remind herself of the key issues to be explained to the patient before the interview (Holloway & Wheeler 2010:89; Whiting 2008: 36). The checklist for points to remember included the following:

- purpose of the interview
- clarification that the interview is related to their emotional experiences and needs in the CCU

- review informed consent with every patient
- format of the interview
- assurance of confidentiality.

Recording of the interviews and the use of a digital recorder is described by Holloway and Wheeler (2010:96) and Whiting (2008:36) as effective and easy for the researcher to keep focus in the interview. The researcher requested permission from the patients to record the interviews. The majority of the patients declined the recording of their interviews. The researcher respected these patients' choice and took field notes instead.

The researcher conducted the open-ended interviews in the CCU or general ward with the patients. The patients were still in a recovery phase and taking them out of the CCU or general ward without the necessary emergency equipment was regarded as a medico-legal risk. To prevent patients from becoming exhausted, the interviews were limited to 15 minutes. The curtains were drawn around the bed to ensure privacy. The computer recording was pre-tested with the patient to evaluate the quality of the patient and the researcher's voices. In the cases where a patient refused the recording of her or his interview, the researcher took field notes.

The researcher followed the phases of the interview as suggested by Baumbusch (2010:255) and Whiting (2008:35). In the apprehension phase of the interview the researcher put the patient at ease and asked the question: "How did you feel being in the critical care unit?"

In the exploration phase the researcher continued to probe the patients about their experiences of being in the CCU. In the cooperative phase a comfort level was set between the patients and the researcher. Although most patients responded with tears in their eyes about their experiences in the CCU, it was only necessary once to stop the interview and wait for the patient to compose himself.

The interviews were short but the question, "If you are granted three wishes for the next patient what will that be?" elicited participation from all the patients. The full significance of this question (the second question) was only realised when all the patients, who had had "expert" experience of the CCUs, knew exactly what they wished for the next

patient to experience in the units. On the contrary, it was perceived that the central issue as reflected in their answers was not what they wished for others, but what they themselves had actually wanted or expected to experience in the CCUs. The interviews were concluded when the researcher expressed her gratitude to the patients and acknowledged their contribution to the study.

The questions the researcher asked the patients were adopted from the appreciative inquiry approach of questioning. Questioning in appreciative inquiry inspire, invite and stimulate reflection from participants on important issues. The question does not focus on the wrong but encourages participants to focus on what works (Cram 2010; Seel 2008).

**On-the-spot interviews** with the patients were conducted by nurses during their interaction with patients when preparing them for transference to the general ward. The patients were asked the same questions, “How did you experience it being in the critical care unit?” and “If you are granted three wishes for the next patient what will that be?” The nurses made notes about the reflections of the patients in their reflective diaries (see Annexure G.4 on CD).

On-the-spot interviews with the families were conducted by nurses during visiting hours. The families were asked the same questions: “How did you experience it having a family member in the critical care unit?” and “If you are granted three wishes for the next families of patients in critical care units what would that be?” The nurses made notes about the reflections of the families in their reflective diaries.

**Reflective diaries** were used by the nurses who conducted on-the-spot interviews. A reflective diary is a record of the researcher’s reflections and personal comments on her or his feelings as well as the start of their interpretations. Koshy (2010:90) claims that the reflective process which includes writing notes of the researchers’ feelings, interpretations and observations in a diary, contributes to the professional growth of the researcher. The researcher kept a reflective diary and found it was easy to use as entries were short, to the point and limited to the particular situation (Koshy et al 2011:115; McNiff and Whitehead 2010:156). Guidelines derived from Koshy et al (2011:116) and McNiff and Whitehead (2010:156) on how to make use of a reflective diary were given to the nurses.

The guidelines read as follows:

- the nurses could use a free writing style to make entries
- they could make use of a pre-determined structure to guide entries but it had to be flexible enough to change if the entries did not fit into this pre-determined structure
- the nurses had to reflect and analyse their entries as it supported professional growth
- they had to create a section for personal commentary which would be used as support or backup during the analysis and the discussion at a later stage.

The researcher made regular entries in her diary about her feelings of being on the collaborative journey towards synergy.

The researcher took **field notes** when the patients did not want their interviews to be recorded. She wrote down exactly what was said, using the patients' language, terms and concepts as advised by Holloway and Wheeler (2010:117) and Stringer (2007:73).

Emerson, Fretz and Shaw (cited in Mulhall 2003:312) differentiate between descriptions and transcriptions in field notes. According to these authors it depends on the focus of the field notes. The researcher utilised descriptions to describe the physical environment, people, actions and smells which made up a setting, while the transcriptions were the written representations of all that was said during the interviews.

The researcher transcribed significant quotes the patients made, for example, "*Ek kon net sowel 'n blompot gewees het.*" ("I could just as well have been a vase.") (Stringer 2007:73).

**Meetings** are, according to Stringer (2007:87), a way of bringing people together to explore the matter under investigation. The researcher has to ensure that every participant has equal opportunities to participate, give her or his opinion and raise concerns. The first step towards enhancing synergy in the CCU was taken when a ward meeting was held at 7 o'clock on 7 November 2011 in the CCU at to activate the implementation of the planned actions. The meeting took place at the nursing bay to allow the nurses to hear alarms and keep the patients under continuous supervision.

The patients who were awake were informed about the meeting and reassured that assistance was available when needed. The nurses ensured that all the intravenous infusions were running and that there was enough volume to be infused. The meeting was scheduled from 7 am to 8 am.

The deputy nursing service manager welcomed all and gave a special welcome to the hospital manager and chief nursing service manager. The intensivist who volunteered to embark on the journey towards enhancing synergy in the CCU made the introductory speech about the urgent need in the CCU to enhance synergy. The researcher thanked everyone who was willing to embark on the journey towards enhancing synergy in the CCU. Consensus was confirmed on the action plan formulated from the focus group (see Chapter 6, Section 6.2.3). The journey would start with the development of nurses' competencies to meet the needs of the patients in the CCU. (The implementation of the plan followed is discussed in detail in Chapter 6, Section 6.5.5).

The meeting between the intensivist, the three key drivers and the researcher focused on the development of the nurses' competencies. The challenges which arose from the in-service training at the time the study was conducted were discussed and the action plan related to the in-service-training was adjusted accordingly. The reviewed action plan is discussed Chapter 6, Section 6.3.

**Informal group discussions** between the nurses working in the CCU and the researcher played a key role throughout the research study and were mainly held to make decisions and reach consensus related to the collaborative approach towards enhancing synergy in the CCU. Kreitner and Kinicki (2007:389) state the success of group decisions is superior to decisions made by individuals and if the group knows each other success is further enhanced.

In this study the experience of the nurses towards the implementation of the action plan was discussed and reviewed using an open-ended questionnaire in the informal group discussion. An open-ended questionnaire allowed the nurses to answer what they thought and there was no standard answer to these questions. Instead of tick boxes the researcher left blank spaces for the nurses to write in an answer (Dawson 2002:31). Open-ended questions maximised opportunities for the nurses to answer questions in their own terms related to their best experiences over the previous months in the CCU.

The nurses also had to write down their wishes related to the patients', the nurses and the CCU (see Annexure I.1 on CD).

**Focus groups** give individuals an opportunity to explore their experiences interactively and are regarded by Stringer (2008:66) as an effective way of gathering data in action research. Universally, researchers use focus groups to generate and collect qualitative data through a group setting. A focus group is described by Lawal (2009:54) and Leung and Savithiri (2009:218) as the systematic questioning of a group of people to obtain in-depth information about the topic of interest; there is no intention to generalise the results to the entire population. Babbie (2010:322) adds a focus group can be regarded as a group interview. It is important for everyone who participates in the focus group to be allowed to voice their experiences and opinions about the issues under investigation. According to De Vos, Strydom, Fouche and Delport (2006:299), focus group interviews allow the researcher to select participants according to certain common characteristics and specific circumstances which they are familiar with. These characteristics of a focus group create a confidential and relaxed atmosphere in which participants can share perceptions, experiences, desires and concerns. In a focus group the emphasis is on the interaction among participants. Moreover, it is of importance to bear in mind that the focus is not only on what is said but also on the verbal and non-verbal forms of communication that intensifies the participants' feelings about the issue under investigation (Holloway & Wheeler 2010:129; Lambert & Loiselle 2008:229; Redman & Curtis 2009:57; Stringer 2007:74). Some of these forms of communication are highlighted by Burns and Grove (2009:543) as arguing, sharing anecdotes, facial expressions and gesturing.

De Vos et al (2006:303) advise researchers to plan a focus group around the participants, the environment and the questions that will be asked during the interview. In the current study the researcher finalised arrangements with the focus group facilitator and set a date for conducting the focus group interview.

The researcher directed an open invitation to all the nurses working in the CCU on 13 September 2011 to attend a focus group that would centre on a collaborative approach to enhance synergy in the CCU. The researcher asked nurses from the neuro-orthopaedic CCU to care for the patients in the selected CCU for the duration of the focus group meeting. This arrangement was made to afford all the nurses from the

specific CCU an equal opportunity to attend the focus group and be involved in formulating an action plan towards enhancing synergy in the CCU.

The researcher further ensured that all the nurses received relevant and accurate information as regards the venue where the focus group meeting would be held which was the new skills laboratory at the clinical facilitations department. The time of the focus group was indicated and it was also mentioned that refreshments would be served. The researcher reassured the nurses that they would have the freedom to withdraw from participation in the group at any time when they wished to do so (De Vos et al 2006:305-306).

Holloway and Wheeler (2010:129), Koshy et al (2011:112), Stringer (2007:74) and Tappen (2011:243) provide a basic framework for facilitating focus groups as outlined below:

- limit the numbers
- remind the participants to encourage attendance
- the facilitator must be experienced and skilled
- having a facilitator and a silent observer taking notes is helpful
- set ground rules
- explain procedures clearly
- facilitators must ensure that each person has an equal chance to talk
- the group has to stay focused
- record what people say and use their own words
- starting with the aspect which has the highest priority, compile an action plan
- allocate tasks, persons, and timelines.

The researcher and facilitator adhered to the framework set by Holloway and Wheeler (2010:129), Koshy et al (2011:112), Stringer (2007:74) and Tappen (2011:243). The focus group consisted of 7 nurses, the deputy nursing manager, the researcher, and the facilitator.

The participants were all nurses working in the CCU in Gauteng and an experienced facilitator conducted the focus group interview. The focus group was held in the new skills laboratory (known as the “new skills lab”). Participants sat in comfortable chairs

around a round table; thus interaction was promoted. The computer recorder failed and consequently the researcher took extensive field notes.

Burns and Grove (2009:543) point out that participants in focus groups should be assured that “all points of view are valid and helpful and that speakers should not have to defend their positions”. The authors add that a feeling of “safety in numbers” can prevail in focus groups which can encourage normally reticent group members to communicate their ideas, opinions and feelings freely (Burns & Grove 2009:542,544). Koshy et al (2011:112) highlight the following as the advantages of focus groups as a data collection method:

- it is a quicker method than individual interviews to obtain viewpoints and comments
- it is a flexible approach to direct discussions and directions
- focus groups give participants an opportunity to express conflicting views
- focus groups can add to information already obtained through other methods
- less threatening to participants; feelings of intimidation can arise in participants during individual interviews.

The disadvantages of focus groups are identified by Koshy et al (2011:113) as the following:

- poor attendance
- the success of the group is directly related to the experience and skill of the facilitator
- power relations within the group may withhold members to contribute
- some members may feel threatened to participate in a group because they are shy or lack confidence
- language problems can be a barrier to communicate thoughts easily or fluently
- transcribing focus groups interaction and analysing the data can be challenging
- members have the tendency to agree rather than to disagree with views of others
- organising focus groups can be time consuming
- the facilitators' preferences can influence discussions.

Koshy et al (2011:113) do not promote focus group interviews. Their perception that focus groups can be challenging, time-consuming, that members tend to simply agree with others without any significant individual contribution to the discussion and that there can be a lack of objective facilitative leadership are supported by Redman and Curtis (2009:59) and Krueger and Casey (2009:20). These four authors include seeking for consensus, seeking sensitive information that cannot be disclosed in a group and confidentiality which is compromised in a group as reasons why focus group interviews should be avoided. On the other hand, Kritzing (cited in Burns & Grove 2009:543) posits that, because in focus groups it is not a conventional 'ask a question to receive an answer' interview, it can "reach parts that other methods cannot reach, revealing dimensions of understanding that often remain untapped by more conventional data collection techniques".

As mentioned before, on 13 September 2011 the researcher invited all the nurses working in the CCU by means of an open invitation to participate in the focus group interview. Unfortunately attendance was poor as only seven ( $n = 7$ ; 38.8%) out of the sample size of 18 ( $N = 18$ ) attended the focus group that evening. Six shift leaders of whom two were key drivers in this study, a registered nurse and the deputy nursing service manager attended. The deputy nursing service manager attended the focus group to show her support to the nurses and the researcher.

To encourage participation among the participants the facilitator first divided the nurses into three groups. Two groups had two participants each and one group had three participants to discuss the strengths, opportunities, aspirations and results following the interview guidelines. After these small group discussions, the participants were then organised into a singular big group. The facilitator subsequently requested feedback from the bigger group.

The researcher welcomed the nurses, introduced the facilitator to them and gave feedback on PHASE 1 of the study. The AACN Synergy Model for Patient Care was reviewed and the need for synergy as evidenced in PHASE 1 was shared with the nurses. The researcher reviewed the purpose for the focus group. The purpose of the focus group was to prioritise and to formulate an action plan towards enhancing synergy in the CCU. The nurses were assured that the information would be treated confidentially (Krueger & Casey 2009:96-97; Welman, Kruger, & Mitchell 2005:202).

The skills laboratory was a quiet and comfortable room in the clinical facilitation department of the selected hospital with good lighting and comfortable chairs. Seating the nurses around a round table strengthened coherency among the nurses and their sense of working together as a team to achieve a collaborative outcome. Another significant feature of this round seating arrangement was that all the nurses were equally seated in such a way that each of them had an equal view of all the others which promoted fair and just treatment (Burns & Grove 2009:189). The facilitator used the SOAR analysis to keep the group focused and to assist the nurses in formulating an action plan to enhance synergy in the CCU. According to Stavros, Cooperrider and Kelley ([Sa]), the new **SOAR** framework for strategic planning has an appreciative intent. O'Neill (2007) and Morrison (2009) describe SOAR as an approach that creates energy rendering results that focus on strengths and successes. SOAR is the acronym for analysing the following characteristics of an organisation:

**S = Strengths**

**O = Opportunities**

**A = Aspirations**

**R = Results**

The SOAR approach starts with a strategic inquiry. In Table 3.1 a summary of the SOAR approach presented.

**TABLE 3.1: SUMMARY OF THE SOAR APPROACH**

<b>STRENGTHS</b>	<b>OPPORTUNITIES</b>
• What are our greatest assets?	• What are the best possible market opportunities?
<b>ASPIRATIONS</b>	<b>RESULTS</b>
• What is our preferred future?	• What are the measurable results?

(Adopted and adapted from Stavros et al ([Sa])

In this study the facilitator reminded the researcher and the nurses to keep in mind that their focus had to be on synergy between the patients, the nurses and the environment. Therefore, for the purpose of the focus group interview, the SOAR approach was appropriate because it linked the strengths, opportunities, aspirations and results to the

synergy between the patients, the nurses and the environment in the CCU. In a collaborative approach the researcher and the focus group facilitator compiled a document to guide the nurses in planning on how to enhance synergy in the CCU (see Annexure D.2).

The following questions were asked related to the **strengths** of the CCU:

- What are we as nurses doing really well?
- What are our greatest assets?
- What are we known for?
- What are we most proud of accomplishing?
- What do our strengths tell us about our skills?
- What are our strengths in the environment we work in?

The following questions were asked related to the **opportunities** in the CCU:

- How do we collectively understand our outside threats?
- How can we reframe to see our opportunities?
- What does the employer ask of you to do?
- What does the client (patient) ask of you to do?
- How can we best partner with the multidisciplinary team?

The nurses had to answer the following questions related to their **aspirations** for their patients, their work environment, and themselves:

- Considering our strengths and opportunities, who should we become?
- How do we allow our values to drive our vision?
- How can we make a difference to our client (patient)?
- How can we make a difference to our work environment?
- How can we make a difference to ourselves?

The nurses had to answer the following questions related to the **results** they wanted to see in the CCU:

- What are our measurable results for the client (patient)?

- What are our measurable results for the nurses?
- What are our measurable results for the environment?
- What do we want to be known for?
- How can we make our strengths visible?
- How can we make our opportunities visible?
- How can we make our aspirations visible?

The nurses and the deputy nursing service manager discovered and explored the strengths, opportunities, aspirations and results of the CCU in groups of two before they reported it back to the bigger group to verbalise their aspirations and collaboratively construct their most preferred future (Ludwig 2010; Stavros et al [Sa]). In the bigger group the different answers were discussed and facilitated with the aim on how to enhance synergy in the CCU.

The facilitator facilitated the responses and also asked for clarifications and responses for further information in those cases where she thought that information would be useful (De Vos et al 2006:295).

The time allocated for the focus group was two hours but it ended after three and a half hours. Fruit juices and snacks were then served (Neutens & Robinson 2010:124).

The computer recording system failed during pre-testing of the recorder and there was no other available computer to replace the faulty one. It was unanimously agreed by all the nurses that the researcher could record the responses on paper. Among the ground rules set by the group one was that mothers with families could answer their cellular telephones as the focus group was conducted in the evening. Other ground rules included that one speaker should speak at a time without interruption and that all the contributions should be spoken out loud (Welman et al 2005:202). The facilitator and the researcher agreed that the researcher had to make extensive notes.

### **3.4.5 Quantitative design**

Quantitative designs are commonly related to positivism. Positivism is regarded as the traditions of the natural science which claim that knowledge is only created by following scientific methods of observation and testing. The purpose of quantitative designs is to

study events and behaviours objectively and to generalise the findings to sites and people not included in the study (Stringer 2008:22; Williamson et al 2012:32). In quantitative designs structured instruments are used to collect data such as questionnaires and document analyses.

**Questionnaires** are regarded as a strategy in which participants are allowed to do a self-report to express their attitudes, beliefs, and feelings about the issue or problem under investigation. Questions in questionnaires can be open-ended, closed-ended, or both. Closed-ended questionnaires are used in quantitative designs because of its effectiveness as regards the collection and analysis of data. Attitude scales and personal inventories are examples of closed-ended questionnaires and the response format of these scales includes the Likert scales and checklists (Koshy 2010:83; Teddlie & Tashakkori 2009:234). Likert scales and checklists were utilised in this study and are discussed.

The competencies of the nurses were assessed with competency rating scales (see Annexure C.4). These assessment tools were based on Bloom's taxonomy (Illinois Online network 2010). Bloom's taxonomy includes the following three domains: the cognitive, affective, and psychomotor domains. The cognitive domain refers to learners' intellectual abilities, their mental capabilities, and their thinking processes. The cognitive domain comprises six levels on a continuum range from knowledge through comprehension, application, analysis, synthesis and evaluation on the highest level. The affective domain focuses on interests, attitudes, opinions, appreciation and values while the psychomotor domain focuses on motor skill development (Illinois Online network 2010). To be a competent nurse growth and advancement in all three domains are essential. The 3-point Likert rating scale utilised in this study evaluated nurses on all three the domains.

Critical points were included in the rating scales and were indicated with an "F" which indicated 'Fail'. If the nurse missed a critical point, he or she would be found 'Not competent yet'. The three points on the scale included:

C = 'Compliant';

NC = 'Non-compliant'

N/A = 'Not applicable'

One mark was allocated when the nurse was compliant with the set criteria and no mark was allocated if he or she was non-compliant with the set criteria. The nurses and the researcher reached consensus that the assessments would be conducted on an unplanned date and time. The training department of the specific hospital requires a minimum of 85% for staff and students to pass assessments and the same pass rate was expected from the nurses working in the CCU. It was agreed upon by the shift leaders and researcher that the researcher should assess all 16 nurses. The nurses reflected that they did not feel confident to engage in peer assessment. Consensus was reached that a single assessor would enhance the validity of the findings. The nurses were divided into two groups, shift leaders and non-shift leaders. During the assessments it was expected from the non-shift leaders to indicate when they would report their findings to the shift leader and it was expected from the shift leaders to indicate when he or she would report their findings to the physicians.

Although it was decided to do unplanned assessments, the nurses still had to declare readiness for assessments. The nurses' declaration was done verbally as they had already given informed consent to participate in this study. The time allocated for each assessment was limited to 60 minutes per assessment which was proven to be more than enough since no assessment took longer. The researcher limited herself to four assessments a day to allow focused attention. Clinical questioning related to the specific competency was used during the assessments. The sum of all the scores was calculated and it gave an overall score that assisted with the validation of the overall competence rating.

The AACN healthy work environment tool utilised in this study was a Likert interval scale. A 5-point Likert scale with a variant of Neutral as the midpoint (see Annexure C.3) was used in this study (Teddlie & Tashakorri 2009:234).

A mailing list of all the nurses working in the CCU were created and the email invitation template, which was generated at the last step of registering the assessment of the CCU at the AACN, was copied and pasted to the message on the nurses' emails addresses and sent to the nurses. The opening date for the submission of the surveys was registered as 23 August 2011 and the closing date for submission was 15 September 2011. The nurses had to follow the instructions in the invitation email and submit the completed questionnaire to the AACN for analysis (AACN 2012). The

researcher sent email invitations to the CCU's email address, addressed to all the nurses who did not have access to a computer at home. The researcher confirmed receipt of emails.

The 5-point Likert scale measured the nurses' responses on two levels, namely, 'Agree' or 'Disagree' on multiple items related to a healthy work environment.

**Document analysis** can provide researchers with valuable background and information on the context of the study. Document analysis is the orderly reviewing or evaluation of documents. Diaries, journals and charts can be used for reviewing. In the current action research study project the patients' critical care flow sheets, were used for the document analysis (Bowen 2009:28; Stringer 2007:77).

The information the researcher obtained from the document analysis was used to assess the physiological and physical needs of the patients in the CCU and added to the researcher's knowledge base of patients' need in the CCU (Bowen 2009:30; Holloway & Wheeler 2010:120; Koshy et al 2011:118).

The document analysis was executed using a compiled checklist to obtain the data related to the patients' physiological and physical needs (see Annexure C.2).

The document analysis was regarded by the researcher as an effective method to assess the patients' physiological and physical needs. All the patients' physical and physiological needs could be obtained from the critical care flow sheet (Bowen 2009:31; Holloway & Wheeler 2010:120).

The patients' flow sheets for the timeframe 1 June 2010 to 31 May 2011 were already archived. Fortunately the files could easily be accessed by the researcher through the administration department of the hospital. The researcher agreed with Bowen (2009:31), Holloway and Wheeler (2010:120) and Koshy et al (2011:119) that one of the advantages of document analysis was the availability of the documents.

There was no cost involved for the researcher to obtain access to the archived files. According to the filing department in the selected hospital the files are usually archived every six months. Bowen (2009:31) and Teddlie and Tashakkori (2009:234) state

questionnaires are an inexpensive method of obtaining data. The researcher found their view to be applicable in this instance because the sources containing the relevant data (the patients' critical care flow sheet) were readily available and no costs were incurred to obtain the information needed.

The researcher was fortunate in that she was able to obtain the patients' data retrospectively from 1 June 2010 to 31 May 2011. As Koshy et al (2011:119) point out obtaining data over a longer period is an advantage of document analysis. Acquiring the patients' data over a longer period further allowed the researcher a broader view of the patients' physiological and physical needs.

Although the researcher agreed to some extent with Bowen's (2009:31) and Holloway and Wheeler's (2010:120) stance that the primary purpose of documents are not research and may not provide data to answer the research question, in the context of the current study the majority of critical care flow sheets contained data essential data in determining the patients' physiological and physical needs. It must be noted that three critical care flow sheets were incomplete as the patients' weight was not written down.

A low retrievability of documents is indicated by Holloway and Wheeler (2010:120) as a disadvantage of document analysis. However, in this study the researcher had no problem to retrieve the patients' files. The specific hospital group in the RSA strongly supports research. When the researcher submitted the ethical consent to the hospital group's research committee and the selected hospital's management, access to the patients' files was granted to her. The researcher had the support of management and it made the retrievability of these files easy.

Holloway and Wheeler (2010:120) and Koshy et al (2011:119) warn that researchers can be bias in the selection of documents. In this action research study the researcher selected the patients randomly thus all patients who met the inclusion criteria had an equal chance to be included in the study. In fact, researcher bias was dispelled where document analysis was concerned since the researcher had no prior knowledge at all of the patients' conditions or histories.

Checklists are regarded as a type of questionnaire and were used to execute the document analysis. Checklists are defined by Teddlie and Tashakkori (2009:234) as

straightforward instruments that allow respondents to check all appropriate response categories for an object that is the focus of the study. In this study a checklist was used to systematically analyse the patients' critical care flow sheets to determine their physiological and physical needs.

After the researcher had done the document analysis in the hospital, in a secluded area, the patients' files obtained from the archives were locked away in the nursing service manager's office. The researcher was not allowed to remove any of the patients' files from the hospital premises.

### **3.4.6 Population**

The population is described by Polit and Beck (2010:307) as the actual group of people that the researcher can approach. According to Burns and Grove (2009:549), the population is defined as "all elements (people, objects, events or substances)" that meet the inclusion criteria". Du Plooy (2009:108) does not limit a population to people only but also includes groups, individuals and events.

According to the AACN Synergy Model for Patient Care, synergy between the patients' needs, the nurses' competencies and the characteristics of the environment is crucial to ensure optimal outcomes for the patients (Kaplow & Hardin 2007:4). To reach the aim of this study the researcher used three different populations. In **Cycle 1** the population consisted of the patients admitted in the CCU and their families and in **Cycles 2 and 3** the population comprised of the nurses working in the CCU of a selected hospital in Gauteng.

The population in Cycle 1: Step 1 was all the patients admitted in the selected CCU that met the inclusion criteria in the timeframe 1 June 2010 to 3 May 2011. Five hundred and ninety-seven patients were admitted to the CCU in the time frame 1 June 2010 to 31 May 2012; of these 366 patients complied with the inclusion criteria.

At the beginning of Cycle 2, 19 September 2011 to 12 October 2011, 18 nurses were working in the CCU and included eight shift leaders, eight registered nurses, and two enrolled nurses. The two enrolled nurses were appointed on 1 October 2011 and

consensus was reached not to assess these two enrolled nurses as they were then still in their orientation phase.

The inclusion criteria for the patients, the families', and nurses included the following:

- Inclusion criteria relating to the CCU patients:
  - o their length of stay (LOS) had to be more than 24 hours
  - o patients could be male or female
  - o they could be from any race group
  - o the patients could either have had a medical diagnosis or undergone a surgical procedure
  - o the age group had to range between 21 years to older than 80 years
  - o their weight had to range between 40 kg to more than 100 kg
  - o patients could be newly admitted or be a readmission
  - o the acuity level of the patients had to range between 18 and 24
  - o the patients who were interviewed had to have a Glasgow coma scale score (GCS) of 15/15 (see Annexure G.1 on CD for GCS on the critical care flow sheet)
  - o the patients who were interviewed had to have a Richmond agitation and sedation score of 0 (see Annexure G.1 on CD for Richmond agitation and sedation scale on the critical care flow sheet).
  
- Inclusion criteria for the families:
  - o the families who were interviewed had to be related to the patients admitted to the CCU in selected hospital in Gauteng
  - o they could be male or female
  - o they could be parents or extended family members or partners of the patients.
  
- Inclusion criteria pertaining to the CCU nurses:
  - o the nurses had to be permanently employed in the CCU of the selected hospital in Gauteng
  - o the nurses had to be registered at the South African Nursing Council (SANC) as a registered or an enrolled nurse

- o the nurses had to work more than 3 months in the CCU (the orientation time in the selected hospital is three months).

### **3.4.7 Sample and sampling**

A sample is selected for the purpose of a particular study. It is not possible to include all the members of a population in a research project and therefore the researcher uses a sample, a subset of the population (Boswell & Cannon 2011:149). As the subset of the population, a sample in quantitative research has to be representative to be able to generalise the outcome to the total available population (Wellman et al 2005:67). The researcher selected a sample of patients admitted to the selected CCU during the course of the year preceding the study.

- Systematic random sampling

Sampling involves selecting a unit of analysis, for example, people, groups, settings, in a way that maximises the researcher's ability to address the research question (Teddlie & Tashakkori 2009:169).

The sampling method utilised in this action research project, namely, to select the patients' files for a document analysis was systematic random sampling. Systematic random sampling is a probability sampling technique utilised in quantitative data collection and is selected at predetermined fixed intervals (Boswell & Cannon 2011:153). The intent of probability sampling was to achieve representativeness, which implies the degree to which the sample correctly represents the entire population (Teddlie & Yu 2007:77).

The patients' admission register was used as the sampling frame to ensure that every patient had an equal chance to be included in the sample (Kisorio & Schmollgruber 2009:36). A record of all the patients admitted in the CCU was kept in an admission register. A total of 366 patients admitted to the CCU met the inclusion criteria. The predetermined interval was every third patient who met the inclusion criteria and the first patient selected was the first patient admitted in the CCU on 1 June 2010. The name stickers of the patients who met the inclusion criteria were marked with a small pink dot on the corner of the sticker. Every third patient that met the inclusion criteria was

numbered and 124 patients were selected following the pre-determined interval of every third patient. The patients' names and hospital numbers were written down and a number was allocated to every selected patient. The researcher had to follow the selected hospital's protocol to obtain the patients files as it was archived. After a patient had been discharged, the selected hospital kept patient files only for two weeks on the hospital premises.

The patients' critical care flow sheets were used to execute the document analysis. The flow sheet is the daily chart that nurses used to record the patients' physiological and physical needs (see Annexure G.1 on CD). The researcher marked the patients' flow sheet on the name sticker with the same number allocated to the patient in the admission register. A list of all the selected patients' hospital identification numbers and the numbers allocated to the patients by the researcher was kept in a safe place. The patients' names were not used on any lists to protect their privacy.

- Convenience sampling

Convenience sampling, a non-probability sampling technique was used to assess the patients' and their families' psychological needs. This means sampling was based on a specific purpose rather than a random sampling technique (Tashakkori & Teddlie 2003:713). The specific purpose for selecting the patients and families in the CCU was to assess the patients' and their families' psychological needs. Using the convenience sampling method for patients in the CCU, and their families, ensured that the most conveniently available patients and families were participants in the study.

Acknowledging that Holloway and Wheeler (2010:141) and Northrop and Arsneault (2007:225) regard convenience sampling as not being representative of the population, the researcher confirmed data saturation to ensure that the psychological needs of the patients and their families were representative of the psychological needs of patients and their families in the specific CCU. The patients in the CCU were regarded as a homogenous group within the population of patients. In other words, as confirmed by Teddlie and Yu (2007:79), bias was limited to the minimum since these patients represented the monolithic similarities of the whole population.

- Data saturation

According to Boswell and Cannon (2011:158) and Teddlie and Tashokkori (2009:182), there are no rules related to the sample size in qualitative data collection. The size of the sample depends on data saturation. Data saturation occurred after similar themes were given by the patients and families and the same information was obtained. The researcher confirmed data saturation in Step 2 after 15 interviews had been conducted with the patients in the CCU. Data saturation occurred after 10 interviews as no new ideas or any new information emerged from the patients concerning their psychological needs. Five more interviews were conducted and data saturation was confirmed.

With assessment of families' needs in Step 3 data saturation was obtained after seven interviews. The data saturation was confirmed after having conducted three more interviews.

- Purposive sampling

According to Tashakkori and Teddlie (2003:713), purposive sampling entails selecting a particular subset of a population specifically rather than making a random selection. Researchers want to gain a wealth of information from the participants and therefore the selection of the sample is of utmost importance (Teddlie & Tashakkori 2009:173). The purpose of the sample in this study was not to generalise the findings of the study but to gain an in-depth understanding of the nurses' competencies (Burns & Grove 2009:352). All the nurses working in the CCUs of the specific private hospital in Gauteng from 1 August 2011 to the 30 June 2012 was invited to embark on the journey towards enhancing synergy in the CCU. The sample consisted of 16 nurses.

In Cycle 3, Step 5 the sample size was 18 nurses and the AACN healthy work environment assessment tool email template was sent to 18 nurses. Only 17 nurses accepted the invitation to assess the environment and they submitted the completed questionnaire electronically via email to the AACN.

In Cycle 4, Step 6 the sample size was 18 nurses. Seven nurses and the deputy nursing service manager accepted the invitation and attended the focus group. The nurses included six shift leaders and one registered nurse.

### **3.4.8 Data collection**

The data collection is discussed in Section 3.4.4 and Section 3.4.5

### **3.4.9 Data analysis of the quantitative data**

The quantitative data was gathered to assess the physiological and physical needs of patients in the CCU in Gauteng. The data analysis of the 124 patients who were selected through systematic random sampling from the patient records was carried out by a statistician using the Statistical Analysis System (SAS) software. Descriptive methods summarises data to discover trends and patterns; it also summarises results for easy understanding and communication (Teddlie & Tashakkori 2009:257). Descriptive statistics were done and bar graphs were used to illustrate and compare data derived from the checklist (Koshy et al 2011:128; Tappen 2011:297). (see Chapter 4, Section 4 for a detailed discussion of the data analysis).

The quantitative data were gathered to assess the competencies of nurses and how it related to the patients' physiological and physical needs in the CCU in Gauteng. A statistician used SAS software to analyse the data obtained from the competency assessments of the 16 nurses. Descriptive statistics for the different competency scores as well as the frequency distributions of the scores were tabulated on a spreadsheet. With the low sample size ( $N = 16$ ), scores were not normally distributed and therefore the statistician did medians and interquartile ranges of scores. The assessment of each skill was tabulated and included on a bar graph (see Chapter 5, Section 5). The p-value was determined with a non-parametric Kruskal-Wallis test (an alternative to one-way analysis of variance [ANOVA]) to determine if there was a significant difference between the different levels of competencies of the nurses and their competency scores (Kruskal–Wallis test 2009). Non-parametric statistics use data obtained from nominal or ordinal scales (Teddlie & Tashakkori 2009:262). In this study a nominal scale was used to categorise the nurses as either a beginner, experienced or critical care trained.

For the 'Pass/Fail' categorisation the p-value was determined using Fischer's exact test (Fischer's exact test 2013). According to the statistician, this analysis could not be done for the competency assessments of mechanical ventilation, cardiac monitoring, central

line associated blood stream infection (CLABSI) or ventilator associated pneumonia (VAP) because all the nurses failed these procedures.

The quantitative data gathered to assess and to re-assess the characteristics of the environment were analysed by the AACN. They used descriptive statistics and the researcher obtained the results from the AACN healthy work environment assessment webpage which is available at

<http://www.aacn.org/dm/HWE/TabbedAdminHome.aspx?menu=HWE> (see Annexure H on CD). The statistician took the mean scores for the six standards as well as the overall mean score and compared it to the AACN's benchmark score. This comparison is illustrated with a bar graph in Chapter 6, Section 6.2.2.2 of this study.

#### **3.4.10 Data analysis of the qualitative data**

A qualitative data analysis of the open-ended interviews was done by the researcher and an experienced coder from 4 September 2011 to 9 September 2011. The researcher used the step-by-step guide delineated by Creswell (2009:108) for action researchers to perform an analysis of qualitative data. These steps were adapted and adopted to analyse the data obtained in the CCUs.

In **Step 1** the researcher prepared the data for analysis. She read the raw transcribed data, the field notes and reflective diary of the researcher.

In **Step 2** the researcher read all the data aloud and had to recognise common words and themes. The researcher gained a first impression and made notes in the margin recording any general thoughts that occurred at that stage. The data was analysed in relation to quality care (Holloway & Wheeler 2010:263).

In **Step 3** the researcher began with the detailed analysis in the form of coding. Coding is a process that involves assigning a code to organise data in fragments of text before bring meaning to information. The researcher used Creswell's advice (2009:108) and coded all surprising and unanticipated data. Coding breaks data into manageable sections. The researcher started with in vivo coding and, as the coding progressed, the coding became more abstract. In vivo coding is the words or phrases of participants singled out by researchers (Holloway & Wheeler 2010:287; Koshy et al 2011:134).

In **Step 4** the coding of themes with the supported category related to the patients' psychological needs was done (Koshy et al 2011:134; Tappen 2011:366).

During **Step 5** the researcher decided how the descriptions and the themes added to the information about the psychological needs of the patients in a CCU (Koshy et al 2011:134).

In **Step 6** the researcher scheduled a focus group for 13 October 2011 to inform the larger group about the findings. The purpose of the focus group was to plan and formulate an action plan towards enhancing synergy in the CCU.

The nurses gave their inputs from the entries they had made in their reflective dairies during the on-the spot interviews with the families. The researcher used literature related to the families' needs to recognise the themes and categories.

### **3.5 RIGOR AND TRUSTWORTHINESS OF QUALITATIVE DATA**

Although action research is designed to promote high levels of eagerness and dynamic participation in the participants, researchers are still obliged to engage the systematic and rigorous processes that are a trademark of good research. Action research is fundamentally qualitative research and rigor is based on checks to ensure that the outcomes of the research are trustworthy. It is therefore essential for researchers to make certain they have rigorously established the reliability, truthfulness, or validity of the information and analyses that have emerged from the research process (Streubert Speziale & Carpenter 2007:49; Stringer 2007:57).

#### **3.5.1 Trustworthiness**

The measure of truth and accuracy of qualitative approaches is judged by trustworthiness and the measure of truth and accuracy of quantitative approaches is referred to as validity (Burns & Grove 2009:214; Streubert Speziale & Carpenter 2011:49; Tappen 2011:153).

Holloway and Wheeler (2010:302) define trustworthiness as "methodological soundness and adequacy". Qualitative research is trustworthy when it accurately represents the

experiences of the study participants. Rather than focusing on reliability in qualitative research, it centres on trustworthiness; internal and external validity in qualitative research is not sought but the emphasis is on the *authenticity* of the data (Creswell 1994:197).

The authenticity and trustworthiness of the research are enhanced when it meets evaluation criteria such as confirmability. Confirmability includes recurring patterns, saturation, credibility, and transferability of data in the specific context (Stringer 2007:57). The concepts credibility, dependability, transferability and confirmability are used to describe the various aspects of trustworthiness.

### **3.5.1.1 Credibility**

Stringer (2007:57) describes credibility as the plausibility and integrity of the study. Credibility addresses the question of whether the research study has established confidence in the truth of the results. Credibility further deals with the question of how the results of the study match the reality within the context of the study. It is of utmost importance in action research that the participants trust the integrity of the processes to ensure personal commitment which is vital to a well-grounded inquiry. Polit and Beck (2008:541) add that credibility consists of two main activities. Firstly, the method of conducting the study has to enhance the believability of the findings and, secondly, the researcher has to follow steps to demonstrate credibility to the reader. According to Polit and Beck (2008), the qualifications and experience of the researcher as the instrument for data collection enhances the confidence in the data (see Annexure M on CD for researcher of this study's curriculum vitae). The researcher had 28 years' experience in critical care nursing and had worked 14 years in the selected CCU. The researcher was the clinical facilitator in the selected hospital for students specialising in critical care nursing. Data saturation was reached in open-ended interviews. Stringer (2007:57) and Teddlie and Tashakkori (2009:213) give the following advice on how to ensure credibility of the research findings:

- Prolonged engagement

A brief meeting to discuss the problem under investigation and to develop deep-seated understanding of the problem is not enough. Polit and Beck (2008:542) emphasise the

importance of spending sufficient time in the gathering of data since this will enable the researcher to obtain an in-depth understanding of the participants. In this study the researcher confirmed data saturation during the interviews with the patients and their families thereby ensuring that a thorough understanding of what they had experienced while being admitted in the CCU was obtained. As an insider researcher, the researcher had a firm degree of the rapport between herself and the nurses who participated in this study.

- Persistent observation

To make certain that all the relevant information related to the phenomenon under study is obtained the researcher has to be persistent and focused in her observation (Lincoln & Guba 1985:304; Polit & Beck 2006:333). During the analysis of the data the researcher focused on data that were both relevant and not relevant to the phenomenon. She followed the guidance given by the Synergy Model for Patient Care of the AACN that related to the patients' needs, the nurses' competencies and the characteristics of the environment.

- Triangulation

Triangulation enhances the truth of the conclusions made by the researcher as her or his evidence is from multiple points of reference and observation. Researchers use triangulation to limit bias that originates from using a "single-method, single-observer and single-theory study" (Polit & Beck 2008:543; Denzin 1989:313). According to Denzin (1989:313), there are four types of triangulation: data triangulation, investigator triangulation, method triangulation and theory triangulation. For the purpose of this study only data and method triangulation were applicable.

Data triangulation refers to the use of data from multiple sources to validate the conclusions researchers make. Denzin (1989:313) notes three types of data triangulation: time triangulation, space triangulation and person triangulation. Time triangulation refers to the collection of data from the same phenomenon at different times. Space triangulation refers to the collection of data from the same phenomenon in multiple sites while person triangulation refers to the collection of data from different

types or levels of people. In this study data was collected from different types of people, namely, patients, their families and nurses.

Method triangulation pertains to the use of different methods of data collection about the same phenomenon. Interviews, reflective diaries, field notes and open-ended questionnaires enable researchers to gain a comprehensive understanding of the phenomenon under study (Polit & Beck 2008:543). Different methods were used to obtain data in this study, namely, document analysis, open-ended interviews, reflective diaries, field notes, a focus group, meetings, and informal group discussions.

- Member checking

Rager (2005:23) regards member checking as the verification of collected data by the participants. Morse, Barret, Mayan, Olson, and Spiers (2002:9) refer to member checking as “informant feedback”, and respondent validation. The researcher reaffirms that the summarised information in fact reflects the information shared by the participants during data collection. In other words, the researcher asks the participants whether the summarised data truthfully contain what they had said or meant (Harper & Cole 2012:510; Lincoln & Guba 1985:304).

In the focus group the SOAR questions were photocopied and handed out to the nurses who had been organised in groups of two and three. The group members in each group discussed the questions and then noted down their answers in writing. After the groups had all completed the questions, they were again organised into one singular group where feedback was given. All nurses were given an opportunity to individually comment on the obtained information and to validate whether the research adequately and correctly revealed their experiences and perspectives (Miller 2008; Stringer 2007:57; Teddlie & Tashakkori 2009:296). The nurses returned the completed answering sheets to the researcher to keep as evidence of the nurses’ experience and perspectives (see Annexure N.3 on CD).

In the cases in this study where consent to use the computer recording was not given by either the patient or his or her family, the researcher confirmed the collected data with the particular participants. The patient co-signed with the researcher to confirm the accuracy of the data collected by means of field notes. Four of the patients who did not

want their interviews to be recorded signed the notes after the researcher had read it back to them.

The researcher further enhanced member checking through the involvement of critical friends in the data analysis phase. They read through the field notes and the transcribed notes and critically reflected on the analysed data.

### **3.5.1.2 Confirmability**

Confirmability limits the degree of bias and subjectivity inherent in a research study (Polit & Beck 2006:336). In the current study confirmability was enhanced by an extensive literature review, expert supervisors, and critical friends who were regarded as experts in the field of critical care nursing.

### **3.5.1.3 Transferability**

Transferability indicates the extent to which the findings of the study can be applied to other contexts (Lincoln & Guba 1985:316). Steps that may be taken to ensure transferability include data that are characterised by thick, rich and layered descriptions and purposive sampling.

The study was done in a selected CCU in a hospital in Gauteng and the aim was not to generalise the findings, but to enhance synergy in this specific context. The transferability of the data to larger populations will depend on the individual researcher who wants to use the data in future studies in a similar context and setting (De Vos et al 2006:46).

### **3.5.1.4 Dependability**

Dependability refers to the stability of the data over time and in different conditions (Polit & Beck 2006:335). In order to maximise dependability, researchers can make use of various methods such as dense descriptions, triangulation, peer examination and review, and various coding-recoding procedures (Lincoln & Guba 1985:316-318).

In this study the researcher used peer examination and review. Two critical friends and an intensivist working in the selected CCU critically reflected on the obtained data revealed in the field notes and the transcribed notes. The intensivist was involved in finalising the formulated plan and played a key role in enhancing the competencies of the nurses.

### **3.5.2 Content analysis**

Content analysis was done with the support and supervision of a researcher who had experience in qualitative data analysis. The themes and categories determined from the data were supported by various authors (see Chapter 4, Section 4.2.2).

## **3.6 VALIDITY AND RELIABILITY OF THE QUANTITATIVE RESEARCH INSTRUMENTS**

The reliability and validity of research designs and instruments ensure accurate conclusions from the research findings (Koshy 2010:98; Polit & Beck 2010:246). For the purpose of this study validity and reliability related to the research instruments are discussed.

### **3.6.1 Validity of the quantitative research instruments**

A research instrument is valid when it measures what it is supposed to measure (Polit & Beck 2010:378).

- Face validity

Face validity pertains to whether an instrument “looks like” it measures what it is supposed to measure (Teddlie & Tashakkori 2009:210). Although face validity is not regarded as a good index of quality, the checklist as utilised in this study clearly is related to the patients’ physiological and physical needs as it started with the demographic data of the patients followed by categories related to their body systems.

Validity of the AACN healthy work environment tool has been reviewed for face validity (AACN 2012).

- Content validity

Content validity of the instrument refers to the degree it measures what it is supposed to measure (Teddlie & Tashakkori 2009:210). The checklist used in the study was supposed to measure the patients' physiological and physical needs which it did. According to Polit and Beck (2010:378), a panel of experts have to determine the content validity of a research instrument. Two clinical nurse specialists who were regarded as experts in the field of critical care nursing validated the checklist for content validity. This process started with the researcher and two clinical nurse specialists taking 20 compiled checklists to the different CCUs to complete the checklists from the patients' critical care flow sheets. The patients were in the CCUs at that stage. The patients with a GCS of 15/15 gave verbal consent after it was explained to them what the purpose of the pre-test was. The wives, husbands, significant others or partners of the sedated patients gave verbal consent to execute the pre-test. After the clinical nurse specialists and the researcher had completed the pre-test, a discussion followed during which the following suggestions were made by the clinical nurse specialists.

- o The age range from 13 to 20 was not regarded as common ages in the selected CCU.
- o In assessing the patients' neurological status (page 2 of checklist), 'awake' and 'coma' could be linked with the GCS.
- o The wording 'paralysed' could be replaced with 'neuromuscular blocking agents'.
- o 'Vigileo' under cardiovascular function could be changed to 'the patients' need for invasive cardiac monitoring'.
- o Poor oxygenation and ventilation will be determined with an arterial blood gas and being on the checklist was seen as unnecessary.
- o The focus of the physical needs of the patients should be on prevention.

Consensus was reached and the checklist was finalised (see Annexure C.2).

Content validity of the nursing competencies rating scales was ensured as the rating scales were used by the hospital group's training departments nationally.

### 3.6.2 Reliability of the quantitative research instruments

Reliability refers to the consistency and accuracy of an instrument in measuring the variables (Teddlie & Tashakkori 2009:211; Polit & Beck 2010:374).

The quality of quantitative data is measured related to the reliability and validity of the research instruments (Teddlie & Tashakkori 2009:209)

De Vos (2002:177) and Polit and Beck (2010:345) concur that the reliability of newly constructed questionnaires should be ensured with a pre-test. The pre-test ensures the use of correct wording and clear questions that follow one another sensibly. Twenty draft checklists (see Annexure C.1) were given to two clinical nurse specialists to obtain data from the patients' critical care flow sheets. The patients' critical care flow sheets for the document analysis were the critical care flow sheets of patients in the CCU at the day of the pre-test. Nine checklists were tested in the selected CCU, three checklists were tested in the oncology CCU, and eight checklists were tested in the neuro-orthopaedic CCU. The checklists were consistent and accurate in gathering the data related to the physiological and physical needs of patients in different CCUs and patients with different nursing diagnoses. Alterations were then made to the checklist according to the clinical nurse specialists' suggestions before the data were gathered using the final version of the checklist (see Annexure C.2). The documents used as a pre-test was not used in the data collection stage of this study.

The reliability of the rating scales was enhanced by its current national use in the hospital group's 6-month elementary critical care course. In order to ensure objectivity and consistency of the assessments, the nurses were assessed only by the researcher.

The reliability of the AACN healthy work environment assessment tool was tested for reliability and showed internal consistency with identical factor structures and Cronbach's Alpha scores of 0.80 or better." According to the AACN, reliability studies will continue using well known surveys as benchmark against which the subscales will be tested (AACN 2012).

### **3.7 ETHICAL CONSIDERATIONS**

Ethical considerations are essential factors in any research project and it is the responsibility of the researcher to ensure that the participants' rights are identified and protected. Streubert Speziale and Carpenter (2011:60) add that ethical considerations comprise a set of values and imperatives researchers are obliged to adhere to when conducting a research project. These ethical principles as applied in this study and the researcher's ethical concerns are discussed in Chapter 1, Section 1.11.

### **3.8 LIMITATIONS OF THE STUDY**

Action research is unique because it is context-bound and entails action which is planned to the specific context; in this study the context was the CCU in a selected hospital in Gauteng. The results are therefore limited to the selected CCU. The lack of continuous supervision and motivation of a unit manager and the delay in the recruitment of a suitable candidate had a negative impact on the implementation of the formulated action plan. The study commenced on 1 August 2011 and the unit manager resigned in March 2011. The human resource department struggled to appoint a suitable candidate and the nurses got the distinct impression that they were 'forgotten'. This feeling of being 'forgotten' could potentially limit the normal speed to collaboratively enhance synergy in the CCU.

The nurses were not all on duty at the same times and it prolonged the decision-making process and the period to reach consensus. The unpredicted and unforeseen moments that are typical of a CCU, led to many rescheduling and cancellation of appointments and limited the progress of the study. Unplanned patient admissions, availability of nurses due to extended patient care, and discontinuity of nurses due to shift rotations limited the participation of nurses in the study.

The study included a small population of nurses and therefore the findings of this study are valid for this specific context only and the generalisation of it is limited.

The patients' critical care flow sheets were incomplete and hampered accurate data to identify the patients' physical and physiological needs. Also, the researcher was known to the nurses there was a possibility that this could lead to biased answers.

The vulnerability of the critically ill patients made them tire easily and quickly and therefore the researcher had to keep the interviews within the timeframe of 15 minutes per interview.

### **3.9 SUMMARY**

This chapter addressed the research methodology and design the researcher and nurses followed to reach the aim and objectives of this study. The research methods and the rigor and trustworthiness of the research process were discussed. The ethical considerations and the limitations of the study were also addressed.

Chapter 4 introduces the process of assessing synergy in a selected CCU in Gauteng by addressing the **LOOK** and **THINK** stages of the action research cycle through looking and thinking about the patients' needs.

**PHASE 1  
CYCLE 1:**

**CHAPTER 4  
ASSESS SYNERGY: PATIENT AND FAMILY  
NEEDS**

“Apprehension, uncertainty, waiting, expectation, fear of surprise, do a patient more harm than any exertion.”

Florence Nightingale (1860)

#### 4.1 INTRODUCTION

In Chapter 3 the research methodology and process were discussed. In Chapter 4, **PHASE1: Cycle 1** the focus is on the assessment of patients’ and families’ needs in the CCU.

The researcher initially **LOOKED** to assess what the patients’ needs were in order to gather relevant information which was subsequently utilised to build a picture of the patients’ needs. Based on the research findings, the researcher continued to **THINK** critically about the patients’ needs.

Although the research method was discussed in Chapter 3, **Cycle 1**, the content and flow of **Cycle 1** is repeated in this chapter by including Figure 4.1 which is a visual description of the content of **Cycle 1**.

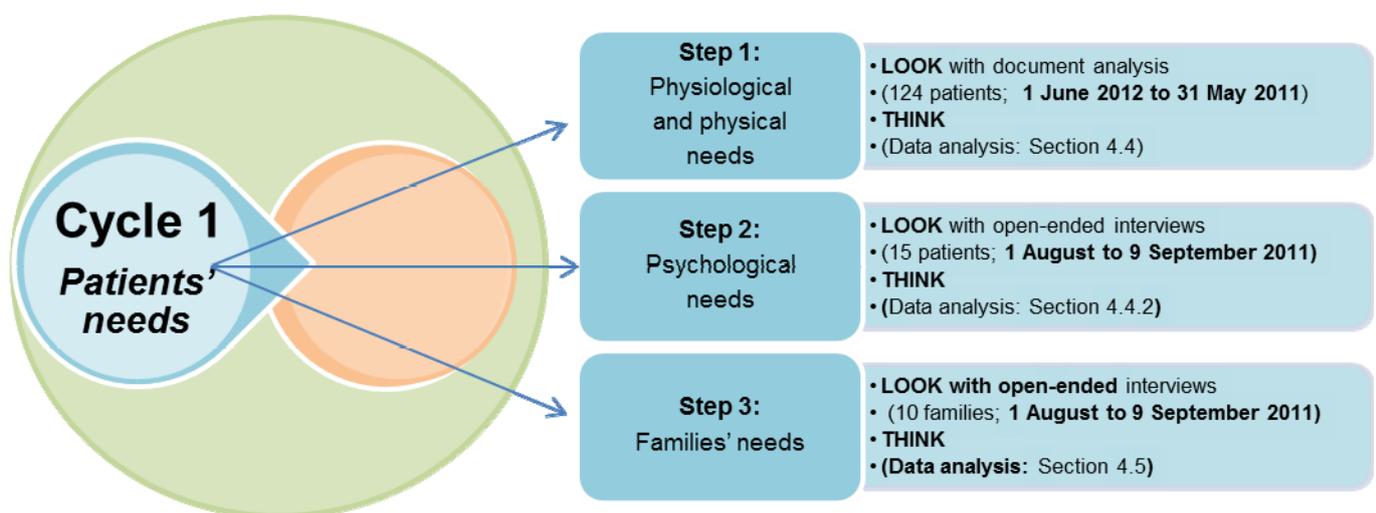


Figure 4.1: Flow of steps in Cycle 1

## 4.2 TIMEFRAME

The timeframe during which **Cycle 1: Assess synergy: Patients' needs** took place was from 1 August 2011 to 9 September 2011. The timeframe linked to the assessment of the patients' needs is summarised in Table 4.1.

### Note:

Due to a staff shortage, the researcher and the shift leaders in the CCU reached consensus that the nurses in the CCU would embark on the journey towards enhancing synergy in the CCU only after the researcher had evidence that there was a need to enhance synergy in the CCU. Therefore, the researcher conducted the **LOOK** and **THINK** phases related to the patients' needs, the nurses' competencies and the characteristics of the environment before the journey towards enhancing synergy in the CCU, in collaboration with the nurses in the CCU, began.

**TABLE 4.1: Cycle 1: PATIENTS' NEEDS**

LOOK	THINK	OUTCOMES
<p><b>Date:</b> 1 August to 31 August 2011</p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Assess patients' physiological and physical needs (refer to Section 4.3.1)</li> <li>• Assess patients' psychological needs (refer to Section 4.3.1)</li> <li>• Assess families' needs (refer to Section 4.3.2)</li> </ul>	<p><b>Date:</b> 5 September to 9 September 2011</p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Analyse patients' needs (refer to Section 4.4)</li> <li>• Analyse families' needs (refer to Section 4.5)</li> </ul>	<ul style="list-style-type: none"> <li>• To determine the patients' needs included: <ul style="list-style-type: none"> <li>○ physiological needs</li> <li>○ physical needs</li> <li>○ psychological needs (refer to Section 4.4)</li> </ul> </li> <li>• To determine families' needs of patients in a CCU (refer to Section 4.5)</li> </ul>

According to the AACN Synergy Model for Patient Care, the patient and family are seen as a complete entity. The patients identify the family as significant in their lives and it is the family who influences the care and the well-being of the patient (Kaplow & Hardin 2007:16). For the purpose of this study family needs are discussed separately but the patient and his or her family were viewed as a complete entity (refer to Section 4.3.2).

## PHASE 1

### **4.3 Cycle 1: LOOK AT PATIENTS' NEEDS**

The researcher viewed the patients holistically. Therefore, the determining of the patients' needs focused on satisfying the patients' physiological, physical and psychological needs which is in line with the assumptions of the AACN Synergy Model for Patient Care (refer to Chapter 2, Section 2.2.2).

A checklist was developed to conduct a document analysis to assess the patients' physiological and physical needs (see Annexure C.2). Questions to assess the psychological needs of patients and their families by means of an open-ended interview were developed (see Annexure D.1).

#### **4.3.1 Cycle 1: Step 1 and 2: Assess patients' needs**

The researcher used a self-designed checklist (see Annexure C.2) to audit 124 patients' files who had been admitted to the CCU from 1 June 2010 to 31 May 2011. From 1 August 2011 to 9 September 2011 the researcher conducted 15 open-ended interviews with patients in the CCU who complied with the inclusion criteria.

The research findings related to the assessment of the patients' needs are discussed in Sections 4.4.1 and 4.4.2.

#### **4.3.2 Cycle1: Step 3: Assess families' needs**

According to the AACN Synergy Model for Patient Care, the patient and her or his family are viewed as a complete entity. The patients identify the family as significant in their lives and it is the family who influences the care and the well-being of the patient. (Kaplow & Hardin 2007:16). Therefore, the researcher assessed the families' needs by conducting open-ended interviews with ten family members of critically ill patients who

were either admitted to the CCU or transferred to the general ward following discharge from the CCU during 1 August 2011 to 9 September 2011.

#### **4.4 Cycle 1: THINK ABOUT PATIENTS' NEEDS**

The research findings were analysed during Step 1 and the research findings are discussed in terms of the patients' physiological and physical needs assessed during the document analysis (refer to Section 4.4.1) and the psychological needs assessed during the open-ended interviews (refer to Section 3.5.3.4).

##### **4.4.1 Physiological and physical needs of the patients**

During the **LOOK** stage the relevant data related to the patients' physical and physiological needs were gathered. To build a picture and to understand the needs of the patients in the CCU the findings collected by means of a document analysis had to be analysed (Stringer 2004:14; Stringer 2007:124). Evidence-informed literature was used to discuss the identified needs of the patients (Sagor 2011:163). The data analysis was done with the help of a statistician.

Next, the physiological and physical needs are discussed using the checklist indicated below to guide the discussion.

- **Section A:** Demographic data
- **Section B:** Physiological needs (Patient system involved)
- **Section C:** Physical needs (Nursing care)

The discussion referred to the findings of each section and related items as it appeared in the checklist. The raw data were provided to the statistician as category frequencies, which were converted to percentages of the total sample.

##### **4.4.1.1 Section A: Demographic data**

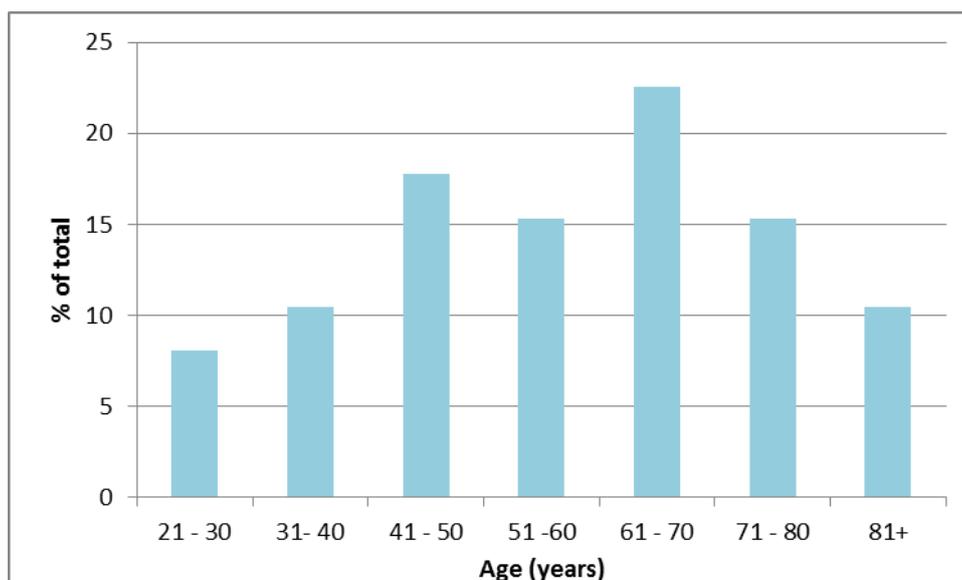
Demographic data is defined as the "statistical data of a population, especially those showing average age, income, education" (*Dictionary.com*:2011) The University of California (2008) describes demographic information as "an individual's name, birth

date, gender, ethnicity, insurance status, address, dates of service and other contact information. Demographic Information contains no information about the individual's illness or treatment".

The demographic data in this study included the age, weight, gender, new admission or a readmission, the medical disorders of the patients, surgical interventions the patients underwent, length of stay of the patients in the CCU and their acuity level in a CCU in Gauteng.

- **Age distribution**

According to the statistician, the sample was a sound representation of all the age groups. In the document analysis the age of the 124 (N=124) patients were between 21 and 80 years or older. Of the patients, ten (n=10 [8.1%]) were in the age group between 21 and 30 years; 13 (n=13 [10.5%]) of the patients were between 31 and 40 years old and 22 (n=22 [17.7%]) were between 41 and 50 years. Another 19 (n=19 [15.3%]) were between 51 and 60 years of age; 28 (n=28 [22.6%]) between 61 and 70 years and 19 (n=19 [15.3%]) between 71 and 80 years. Thirteen (n=13 [10.5%]) of them were older than 80. The age of the majority of patients (n=28 [22.6%]) ranged between 61 and 70 years while the minority (n=10 [8.1%]) was between 21 and 30 years. Graph 4.1 illustrates the distribution of the age of the patients used in the document analysis in a CCU in Gauteng.



**Graph 4.1: Age distribution (N=124)**

A discussion pertaining to related literature on the age distribution of patients admitted to the CCUs follows.

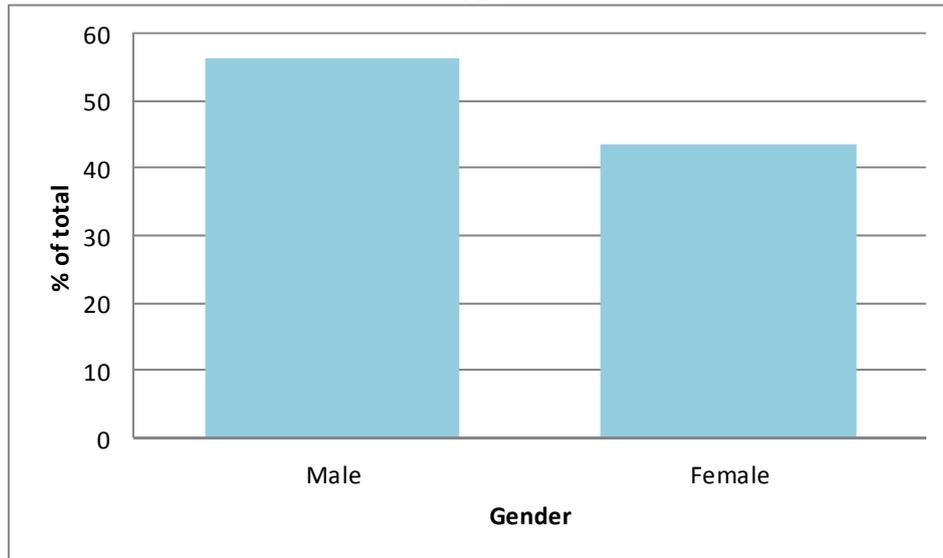
Casey and Balas (2011:150) state adults of 65 years and older are regarded as elderly patients. The authors add that critically ill elderly patients often present with multiple chronic disorders. They note that patients who are 65 or older occupy 55% – 58% of days in the CCU. Cronin, Spollen, Nielsen, Spollen and Edwards ([Sa]) agree that the highest proportion of CCU patients are elderly with 46.5% of all admissions to CCUs being people 65 years and older. Kaplow and Hardin (2007:78) posit that advanced technology, the betterment of healthcare and improved medical interventions are primary reasons why people live to an advanced age. It does not, however, mean aging has been slowed or reversed; instead of being stretched out, the process of aging itself is being postponed. Aging leaves the older patient vulnerable to rapid deterioration when becoming critically ill. Elderly patients are highly at risk of coronary artery disease, disorientation, infections and an increased risk to develop diabetes mellitus (Kaplow & Hardin 2007:83; Urden et al 2010:240). The normal ranges of PaO<sub>2</sub> are age dependant but, as pointed out by Urden et al (2010:590), the normal PaO<sub>2</sub> ranges for patients 60 years or older decrease because with aging changes in the ventilation/perfusion matching occurs.

Age is one of the determinants in the Acute Physiology and Chronic Health Evaluation scoring system to calculate the severity of a patient's illness (Kho, McDonald, Stratford & Cook 2007:378). The findings relating to age in this study were consistent with literature as there were more patients in the 40–80 year range than in the age groups under 40 and over 80 years old.

Following is a discussion concerning the findings of age distribution in the CCU. The nurses reflected that they specifically experienced managing “*disorientated elderly patients*” as a “*challenge*”.

- **Gender**

The document analysis conducted in this study indicated that 54 (n=54 [43.5%]) of the patients were female and 70 (n=70 [56.5%]) were males. The gender distribution of patients in the CCU is depicted in Graph 4.2.

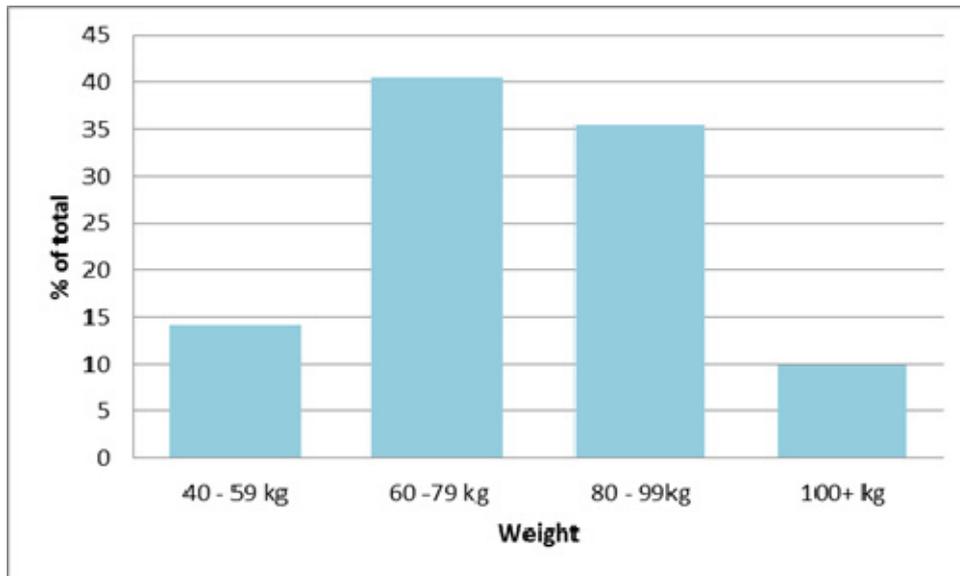


**Graph 4.2: Gender distribution (N=124)**

Cronin et al ([Sa]:2) conducted a study in a CCU in Birmingham in the UK and found that males outnumbered the females in the CCU. In another study done in Queensland, Australia by Wallen, Chaboyer, Thalib and Creedy (2008:534) the findings revealed that 68% of the admissions in the CCU were males and 32% were females. Chalya, Gilyoma, Dass, Mchembe, Matasha, Mabula, Mbelenge and Mahalu (2011:61) found in their study that they conducted in a reference hospital in north-western Tanzania that the male/female ratio was 5.5:1 in trauma admissions whereas the male/female ratio in the CCU admissions was 1.2:1. The findings in the current study that male admissions in the specific CCU were in the majority (n=70 [56.6%]) were thus consistent with literature.

- **Weight**

The weight of three patients were not indicated on the patients' critical care flow sheets, thus the weight were recorded for 121 patients only, reducing the sample for this data from 124 to 121 (N=121). The document analysis conducted in this study revealed that 17 (n=17 [14.1%]) of the patients in the CCU presented with a recoded weight of between 40 and 59 kg. Forty-nine (40.5%) of the patients weighed between 60 and 79 kg; 43 (35.5%) of them weighed between 80 and 99 kg and 12 (9.9%) weighed over 100 kg. The majority of the patients (n=49 [40.5%]) weighed between 60 and 79 kg while weight of the minority (n=12 [9.9%]) was over 100 kg. Graph 4.3 depicts the weight distribution of patients in the specific CCU.



**Graph 4.3: Weight distribution (N=121)**

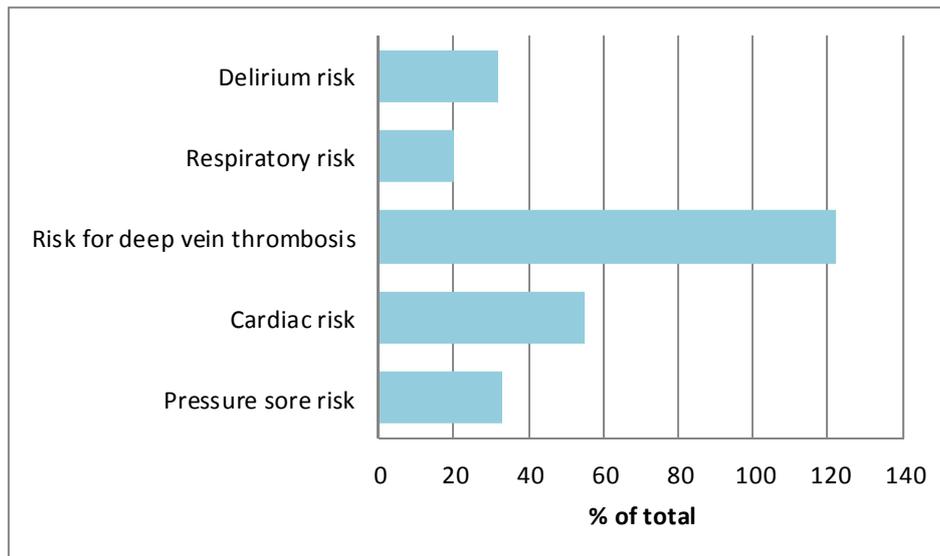
Oliveros and Villamor (2008:516) state underweight, overweight and obese patients tend to stay longer in the CCU when compared to patients with a normal body mass index. The authors add the former also have increased risks for multi-organ dysfunction. Martyn, Kaneki and Yasuhara (2008:137) further note obese patients have an increased risk of insulin resistance and are prone to have complications associated with hyperglycaemia like impaired wound healing, an increased risk of infection, lipogenesis and increased respiratory effort.

The ongoing discussion on what weight should be used to calculate the patients' energy needs is mentioned by Clark (2009:122). At issue is whether an adjusted body weight, ideal body weight based on height, or actual weight should be considered (Clark 2009:122). According to Kaplow and Hardin (2007:163), overweight and obesity are associated with an increased risk for coronary artery disease. This statement is confirmed by research done by the American Heart Association (AHA) (2012) and the Heart and Stroke Foundation in South Africa (2007). To be familiar with patients' weights is of vital importance as weight is used to calculate tidal volumes, patients' body surface area in invasive haemodynamic monitoring and calculating the exact dosage of medications, for example epinephrine. The effect of epinephrine is dependent on the amount of epinephrine/kg/min (Baumgartner 2009:447; Stout 2009:1249; Tuggle 2009:1099).

- **Risk profiles**

Of the patients, 32 (n=32 [25.8%]) had a risk for delirium, 20 (n=20 [16.1%]) risked respiratory diseases, and 122 (n=122 [98.4%]) was at risk to develop deep vein thrombosis. Fifty-five (n=55 [44.4%]) of the patients had a cardiac risk while 33 (n =33 [26.6%]) had a pressure sore risk.

The majority of patients in the CCU, namely 122 (n=122 [98.4%]) was at risk of developing deep vein thrombosis followed by cardiac risk (44%) and the minority, 20 (n=20 [16.1%]), were at risk for respiratory diseases. It must be noted that the percentages for the risk profile did not calculate up to 100% since individual patients might have been subject to multiple risks. Graph 4.4 illustrates the risk profiles of the patients when they were admitted in the CCU.



**Graph 4.4: Risk profiles of patients when admitted to the CCU (N=124)**

Buonocore and Sather (2009:33) state patients with an existing co-morbid disease have an increased mortality of 2% to 8.4% when compared to patients with no comorbid disease upon admission in the CCU. The patients' chronic illness history is used in the Acute Physiology and Chronic Health Evaluation score to calculate the severity of his or her illness and, therefore, the co-morbidity.

- **Delirium risk**

Delirium is described by Urden et al (2010:167) as “global impairment of patients’ cognitive processes, coupled with disorientation, decreased short term memory, hallucinations, abnormal thought processes and unsuitable behaviour” Van Rompaey, Elseviers, Schuurmans, Shortridge-Baggett, Truijen and Bossaert (2009:R77) list age, smoking, the frequent use of alcohol, sedatives and analgesics put the critically ill patients at risk for delirium.

Makic and Carlson (2009:107) include acid-base disturbances, electrolyte imbalances, hypoglycaemia, intracranial disorders, endocrine disorders, organ failure, hypoxaemia and hypercarbia as possible causes for delirium in critically ill patients. Kaplow and Hardin (2007:56) add disturbed sleep in a CCU as a precipitating factor for the development of delirium. Considering Makic and Carlson’s (2009:106) statement that the greater the severity of illness the higher the risk is for patients to develop delirium, it can be deduced that because all patients in the CCU are critically ill, they are all at risk of developing delirium.

In this study, according to the pre-admission form used in the CCU (The Hospital 2011) (see Annexure E.5), 32% of the patients were regarded as a delirium risks. The following criteria are used to determine whether patients are at risk for delirium in the specific CCU (The Hospital 2011):

- o patients with a previous psychiatric diagnosis
- o alcohol use more than four ‘tots’ daily on average
- o current ongoing psychiatric medication
- o recent epileptic fits/convulsions
- o older than 70 years.

- **Respiratory risk**

Patients noted as a respiratory risk when admitted in a CCU are those with a history of chronic obstructive pulmonary disease, interstitial lung disease, pulmonary fibrosis and a history of smoking which may lead to earlier intervention with mechanical ventilation (Buonocore & Sather 2009:37). The type of surgery, age, functional status, blood urea

level, blood transfusion, emergency surgery, steroid use for chronic conditions, smoking and alcohol intake is indicated in a post-operative pneumonia risk index as variables related to the risk of developing pneumonia post-operatively (Buonocore & Sather 2009:38; Urden et al 2010:614).

On the pre-admission questionnaire of the CCU (The Hospital 2011) where this study was conducted the following criteria were used to identify a respiratory risk:

- o weight – male above 125 kg, female above 100 kg
- o thoracic surgery or placement of intercostal drain
- o history of wheezing and/or tightness of chest
- o home oxygen use
- o neck circumference 42 cm or more (male)
- o pre-existing lung disease
- o shortness of breath with minimal exertion
- o continuous positive airway pressure at home for sleep apnoea
- o upper gastrointestinal surgery
- o age above 70 years
- o shortness of breath at rest.

In this study 16.1% of the 124 patients under investigation were found to be at risk of developing respiratory complications.

- **Risk for deep vein thrombosis**

Venous thromboembolism refers to venous thrombosis and pulmonary embolism. Pulmonary embolism originates from proximal deep vein thrombosis that can lead to death. Clinical factors that put a patient at risk for developing deep vein thrombosis includes advanced age, prolonged bed rest with or without paralysis, previous deep vein thrombosis, cancer, extensive surgery, orthopaedic surgery, hip fractures, major trauma, stroke, obesity, varicose veins, heparin-induced thrombocytopenia and heart failure (Dirks & Howland-Gradman 2009:347; Urden et al 2010:488). According to Urden et al (2010:490), all patients admitted to a CCU should be assessed for risk of venous thromboembolism. The hospital policy of the private hospital where this study was done (The Hospital 2011) stipulates that every patient have to be assessed for the

risk of deep vein thrombosis. A standardised form is provided to score patients and classify them as a low, medium or high risk.

- **Cardiac risk**

Cardiovascular disease is an important risk factor in critically ill patients. The American Heart Association (2012) states a risk for coronary artery disease increases the risk for perioperative myocardial infarction, heart failure or death. Urden et al (2010:426) and Kirkwood (2009:279) identify the following as risk factors for coronary artery disease:

- o hyperlipidaemia
- o hypertension
- o a high fat diet
- o obesity
- o physical inactivity
- o diabetes mellitus
- o cigarette smoking
- o chronic kidney disease
- o metabolic syndrome.

According to Kirkwood (2009:277), coronary artery disease can be prevented if the people at risk follow the available guidelines such as to stop smoking, increase their physical activities, follow a 'heart-healthy' diet and strive to maintain a healthy weight.

In this study the nurses used the criteria on the selected CCU's pre-admission questionnaire form to establish patients' cardiac risk (The Hospital 2011). The criteria were the following:

- o age older than 70 years
- o previous angioplasty
- o Lanoxin as home medication
- o chest pain – exercise related
- o previous cardiac bypass surgery
- o fainting or black-out history
- o Cordorone X (Hexarone) as home medication
- o chest pain - not related to exercise

- o previous stent
- o cardiac failure and on treatment
- o history of palpitations
- o previous myocardial infarct or angina.

The fact that 55 of the 124 patients (44.4%) in this study were regarded as cardiac risks was an alarming finding.

- **Pressure ulcer risk**

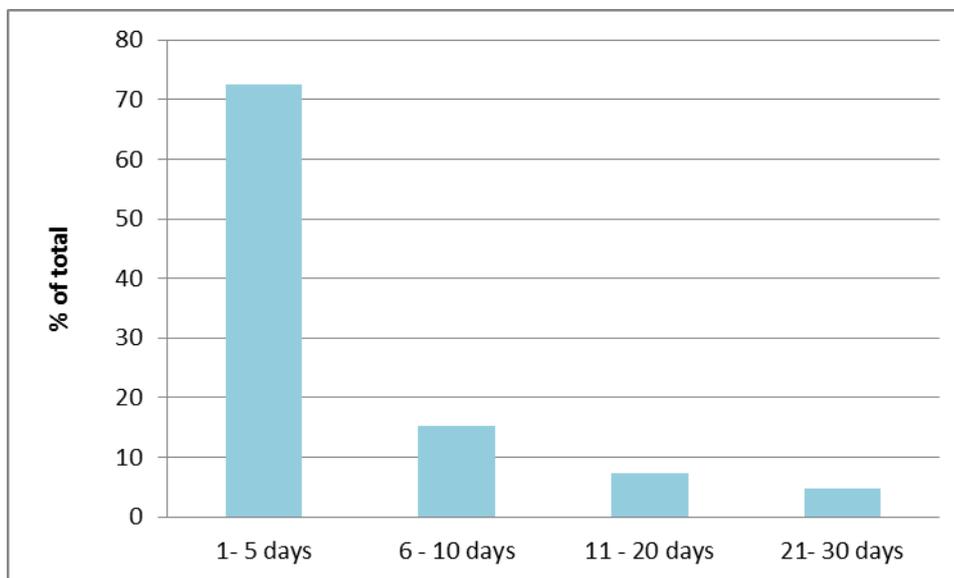
The highest incidence for pressure ulcer formation is among elderly patients aged 65 years and older. Sensory or motor loss, bed rest, reduced vasomotor tone, hypovolaemia, poor nutrition and age related skin changes are given as factors that initiate the skin breakdown (Criddle 2009:1385). According to Kaplow and Hardin (2007:342), the immobility of patients due to sedation and paralytics, medical equipment such as endotracheal tubes, incontinence, shock, and high doses of vasopressors are also factors that contribute to skin breakdown. These authors emphasise the prevention of skin breakdown is imperative and frequent skin assessment and evaluation of current treatment must be a top priority in a CCU. Urden et al (2010:252) advise the repositioning of patients every two hours and the use of pressure-relieving devices.

Thirty-three (26.6%) of the patients in this study were assessed as pressure ulcer risks according to the selected CCU's pre-admission questionnaire (The Hospital 2011). The criteria for assessment were the following:

- o patient cannot sit on his or her own
- o urinary catheter
- o paraplegic or quadriplegic
- o patient cannot turn on her or his own
- o adult nappy for urinary or faecal incontinence
- o overweight – male above 30 kg of his ideal weight; women weighing more than 100 kg
- o patients not responding to verbal commands, for example, due to coma, confusion and/or under sedation
- o underweight/thin/malnourished/bony prominences.

- **Length of stay**

Seventy-three per cent of the patients had spent between 1 and 5 days in the CCU while 95% of them had spent up to 20 days in the CCU. Of the 124 (N=124) patients in the CCU, 90 (n=90 [72.6%]) had been hospitalised for between one and five days in the CCU, 19 (n=19 [15.3%]) between six and 10 days, nine (n=9 [7.3%]) between 11 and 20 days, and six (n=6 [4.8%]) of the patients had stayed in the CCU between 21 and 30 days. The patients (n=90 [72.6%]) who had stayed between one and five days were in the majority, and those patients (n=6 [4.8%]) who had been in the CCU between 21 and 30 days were in the minority. Graph 4.5 depicts the distribution of the patients' length of stay in the CCU.



**Graph 4.5: Distribution of the length of stay (N=124)**

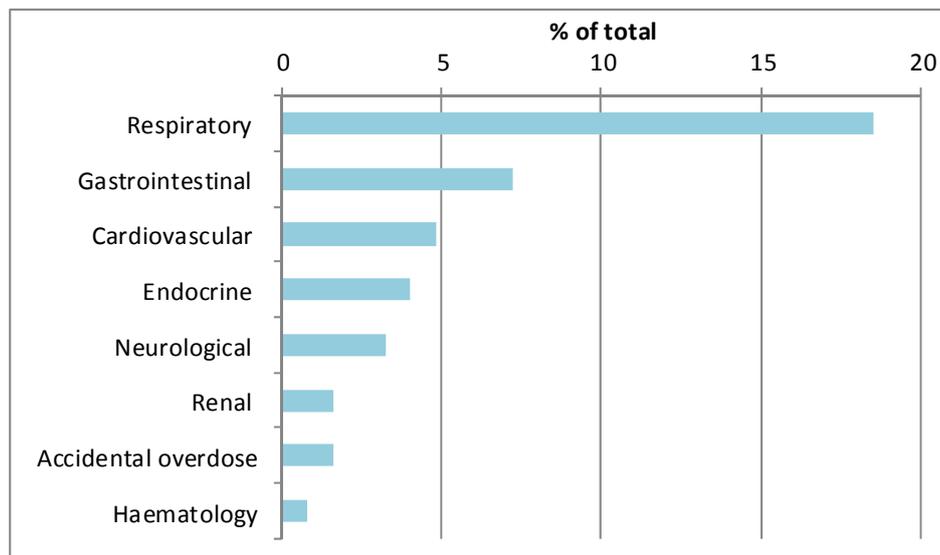
According to the Institute for Healthcare Improvement (2011b), an independent non-profit organisation based in Cambridge, Massachusetts in the USA, the average LOS of patients in a CCU can be calculated by dividing the number of CCU patient days by the number of patient discharges per month.

Williams, Ho, Dobb, Finn, Knuiman and Webb (2010:703) conducted extensive research on the LOS of patients in a CCU in the Royal Perth Hospital in Australia. Their findings revealed that most hospital deaths occurred within the first 10 days after patients had been admitted to a CCU. An increased LOS was associated with increased risks of long-term mortality after hospital discharge, but not associated with an

increased risk of in-hospital mortality. In this study the majority of patients' (n=90 [72.6%]) LOS was between one and five days.

- **Medical disorders**

The document analysis revealed that 52 (41.9%) of the patients were diagnosed with a medical condition. Four patients (3.2%) presented with neurological disorders, 23 (18.5%) had respiratory disorders and two (1.6%) of the patients had a renal disorder. Five (4%) patients were diagnosed with an endocrine disorder, nine (7.3%) had gastrointestinal disorders while one (0.8%) had a haematology disorder and one (0.8%) had had an accidental overdose of medication. The most common diagnosis was respiratory disorders (18.5%). Graph 4.6 depicts the distribution of the medical disorders in the CCU.



**Graph 4.6: Distribution of the medical disorders in the CCU (N=124)**

Table 4.2 summarises the medical disorders related to the affected body system. In column 1 the affected body system is identified and in column 2 the related medical disorders patients suffered from in the CCU.

**TABLE 4.2: SUMMARY OF THE PATIENTS' MEDICAL DISORDERS RELATED TO THE AFFECTED BODY SYSTEM**

<b>COLUMN 1: AFFECTED BODY SYSTEM</b>	<b>COLUMN 2: MEDICAL DISORDER</b>
<b>Neurological system</b>	<ul style="list-style-type: none"> <li>• Cerebral vascular incident</li> <li>• Meningitis</li> </ul>
<b>Respiratory system</b>	<ul style="list-style-type: none"> <li>• Pneumonia</li> <li>• Pleural effusion</li> <li>• Pulmonary embolism</li> <li>• Respiratory distress</li> <li>• Pulmonary oedema</li> </ul>
<b>Cardiovascular system</b>	<ul style="list-style-type: none"> <li>• Pericardial effusion</li> <li>• Atrial fibrillation</li> <li>• Hypertension</li> </ul>
<b>Renal system</b>	<ul style="list-style-type: none"> <li>• Renal failure</li> </ul>
<b>Endocrine system</b>	<ul style="list-style-type: none"> <li>• Diabetes mellitus</li> <li>• Diabetic ketoacidosis</li> </ul>
<b>Gastrointestinal system</b>	<ul style="list-style-type: none"> <li>• Liver failure</li> <li>• Oesophageal varicose veins</li> <li>• Pancreatitis</li> <li>• Cholesistitis</li> <li>• Diverticulitis</li> </ul>
<b>Haematology system</b>	<ul style="list-style-type: none"> <li>• Leukaemia</li> </ul>
<b>Accidental overdose</b>	<ul style="list-style-type: none"> <li>• Ethylene glycol overdose</li> </ul>

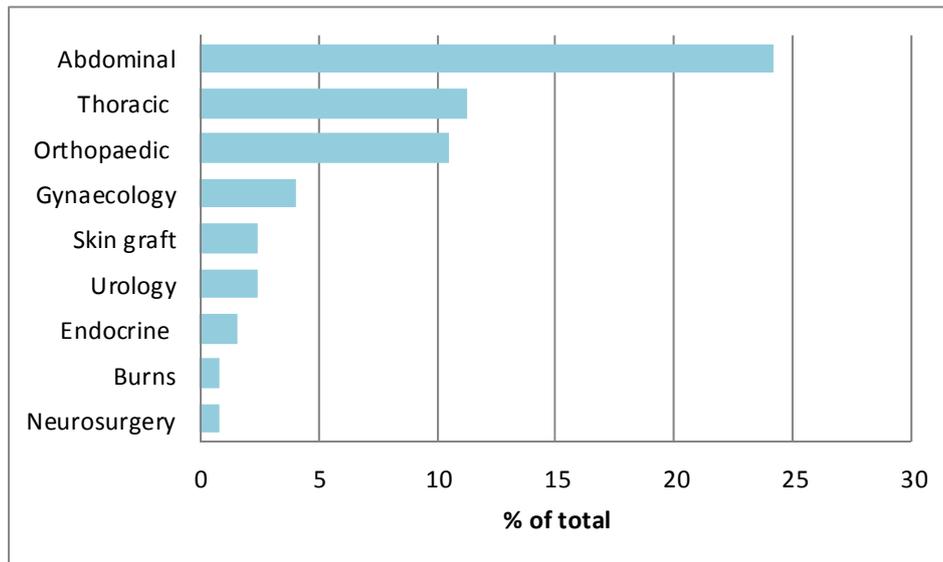
In research conducted by Porter, Johnston and Henning (2009:146) it was found that there was a similarity in the medical conditions of patients in a field hospital CCU and in CCUs in the UK practices. Hypothermia, heatstroke, myocardial infarction with cardiac arrest, pneumonia, acute asthma, ischaemic stroke and meningitis and encephalitis were the most common medical conditions that necessitated admission to a CCU. The patient populations in the medical intensive care unit in the Johns Hopkins Bayview Medical Center (2008) included asthma, pneumonia, end stage renal disease, multi-system organ failure, diabetes mellitus, sepsis and gastrointestinal bleeds.

The medical conditions indicated by the authors above show similarities to the medical conditions that the patients in the CCU where this study was conducted presented with.

- **Surgical interventions**

Seventy-two (58.1%) of the patients admitted to the CCU had been admitted post-operatively. One (0.8%) of the 124 (N=124) patients admitted post-operatively had had neurosurgery, 14 (11.3%) had had thoracic surgery and three (0.8%) of the patients had had a urology procedure done. Thirty (24.2%) patients admitted post-operatively had

undergone abdominal surgery and 13 (10.5%) had had orthopaedic surgery. One (0.8%) of the patients was admitted with burns, five (4%) patients had had a gynaecology procedure done. Three (2.4%) of the patients had had a skin graft and endocrine surgery had been performed on two (1.6%) patients. The most common surgery intervention was abdominal surgery (24%). Graph 4.7 depicts the distribution of the surgical interventions patients had undergone in the CCU.



**Graph 4.7: Distribution of the surgical interventions done in the CCU (N=124)**

Table 4.3 summarises the surgical interventions in patients related to the disciplines of surgery. In column 1 the surgical discipline is identified and in column 2 the related surgical interventions patients had undergone in the CCU are indicated.

**TABLE 4.3: SUMMARY OF SURGICAL INTERVENTIONS**

<b>COLUMN 1: SURGICAL DISCIPLINE</b>	<b>COLUMN 2: SURGICAL INTERVENTIONS</b>
<b>Neurosurgery</b>	<ul style="list-style-type: none"> <li>• Removal of brain tumour</li> </ul>
<b>Thoracic surgery</b>	<ul style="list-style-type: none"> <li>• Thoracotomies</li> </ul>
<b>Urology</b>	<ul style="list-style-type: none"> <li>• Nephrectomy</li> <li>• Ileostomy</li> </ul>
<b>Orthopaedic surgery</b>	<ul style="list-style-type: none"> <li>• Back fusions</li> <li>• Neck fusions</li> <li>• Open reduction internal fixation femur</li> </ul>
<b>Gynaecology</b>	<ul style="list-style-type: none"> <li>• Hysterectomy</li> <li>• Oövaectomy</li> </ul>
<b>General surgery</b>	<ul style="list-style-type: none"> <li>• Endocrine surgery: thyroidectomy</li> <li>• Abdominal surgery: <ul style="list-style-type: none"> <li>○ Laparotomy</li> <li>○ Cholecystectomy</li> <li>○ Hemicolectomy</li> <li>○ Partial gastrectomy</li> <li>○ Removal of abdominal tumour</li> <li>○ Infiltration of gastric bleeding</li> </ul> </li> <li>• Burns</li> </ul>
<b>Plastic surgery</b>	<ul style="list-style-type: none"> <li>• Skin graft</li> </ul>

Sobol and Wunsch (2011:217) report that high risk surgical patients are still a substantial percentage of CCU admissions. Although there are no universal criteria for post-operative admissions of patients to the CCU, Sobol and Wunsch (2011:217) note that there are predictors of post-operative outcomes that do in fact determine the likelihood of admitting patients to the CCU. These predictors are known as pre-operative risks and are risks associated with specific surgical procedures. The duration as well as the urgency of surgery has both been shown to have a negative impact on patient outcomes; the longer the duration and the more urgent the procedure, the worse the outcomes.

O'Brien and Dickinson (2009:1310) emphasise that nurses must be vigilant when taking care of patients post-operatively as the patients are vulnerable to pain and discomfort, haemodynamic changes, and respiratory compromise. These patients are further at risk for complications related to anaesthesia and the surgical intervention. Furthermore, Kaplow and Hardin (2007:659) identify more post-operative complications such as hypoventilation, laryngospasm, noncardiogenic pulmonary oedema, hypotension, hypertension, cardiac dysrhythmias, hypothermia, malignant hyperthermia, pseudocholesterase deficiency, pain, and nausea and vomiting.

Most of the patients (n=72 [58.1%]) in the CCU at the time the study was conducted had had surgical interventions. This meant that, as advised by O'Brien and Dickinson (2009:1310), the nurses had to be vigilant, knowledgeable and skilled to deliver the best care possible.

#### **4.4.1.2 Section B: Physiological needs**

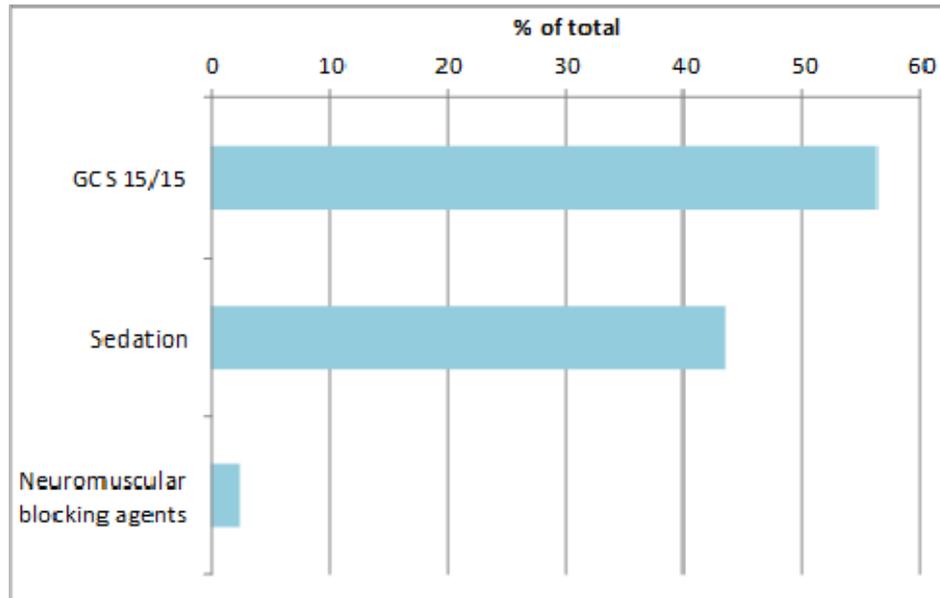
The body system approach is still regarded by Kaplow and Hardin (2007:8,121) as a relevant method to determine the physiological needs of the patients that the nurses have to meet. The physiological needs of the patients relate to the status of the functioning of the body systems. Thus, the body systems were used to guide the components of this section of the checklist. Included were the following systems:

- neurological system
- cardiovascular system
- respiratory system
- renal system
- gastrointestinal system
- endocrine system
- integumentary system.

The study findings applicable to each system are discussed next.

- **Neurological system**

The document analysis showed that all (N=124 [100%]) patients were evaluated according to the GCS. Seventy (56.5 %) of the patients' GCS was 15/15, indicating that the majority of the 124 patients in the CCU opened their eyes spontaneously, obeyed commands and were orientated. Three (2.4%) patients received neuromuscular blocking agents and 54 (43.5%) required sedation. The majority of patients (56.5%) scored 15/15 according to the GCS and only 2.4% were treated with neuromuscular blocking agents. It must be noted that the percentages did not calculate to 100% since individual patients might have been allocated to more than one classification. Graph 4.8 depicts the neurological status of patients in the selected CCU.



**Graph 4.8: Neurological status of patients in the CCU (N=124)**

In the CCU neuromuscular blocking agents are used on ventilated patients with an increased work of breathing, to ensure patient ventilator synchrony and to treat laryngospasms as neuromuscular blocking agents interrupts the transmission of impulses from the nerve to the muscle causing decreased muscle activity. It is of vital importance to administer benzodiazepines, propofol and/or opioids to patients on neuromuscular blocking agents to provide amnesia, analgesia and loss of consciousness (Kaplow & Hardin 2007:652; Urden et al 2010:265). Siedlecki (2009:79), concurring with these authors, add it is of utmost importance as the patients are at an increased risk for problems associated with immobility. Being paralysed, the patients are unable to communicate their needs, and are fully dependent on basic nursing care. Urden et al (2010:265) emphasises that neuromuscular blocking agents must be used with great caution as long-lasting weakness, muscle fibre atrophy and muscle fibre necrosis may occur after neuromuscular blocking agents.

In this study the patients who received neuromuscular blocking agents were the minority (n=3 [2.4%]). Although rendering nursing care to patients on neuromuscular blocking agents is emotionally less challenging, the challenge lies in physically taking care of them as they are helpless and fully dependent on nursing care.

According to Buonocore and Sather (2009:70), in a study done by Fraser, Prato, Riker, Berthiaume and Wilkins in 2000 at the University of Vermont College of Medicine,

Burlington, USA it was found that 71% of 130 patients (studied for 916 patient-days) in the CCUs were agitated as a result of sleep deprivation, pain, anxiousness, immobility or delirium. Sedation and analgesia is used in combination to relieve pain, anxiety, fear and stress, and is indicated with patient ventilator asynchrony. Sedatives and analgesics work synergistic when it is administered in combination and lower dosages of sedatives are then required. Buonocore and Sather (2009:70) distinguish between four levels of sedation: minimal, moderate, deep, and general anaesthesia.

Most patients in CCUs maintain protective reflexes, a patent airway and responds to verbal stimuli hence they receive moderate sedation (Kaplow & Hardin 2007:656). The choice of sedation varies in critical care practices, but midazolam and propofol are suggested for short-term sedation and lorazepam for longer-term sedation. In this study the doctors in the CCU preferred to use a combination of midazolam and morphine and frequently added propofol to get the best sedation results.

In the literature different sedation scales are discussed. These include the Ramsay sedation scale, the Riker Sedation-Agitation scale, the Motor Activity Assessment Scale and the Richmond Agitation-Sedation scale (Kaplow & Hardin 2007:366). In the current study the nurses in the selected CCU had to be skilled in using the Richmond Agitation-Sedation scale. It is important to know the side effects of midazolam, morphine and propofol as the patients can hypoventilate leading to hypotension. The side effects are dose and rate dependant and patients require close monitoring of their sedation levels while receiving these sedatives. Patients who receive propofol for longer than 72 hours may develop pancreatitis; furthermore, propofol is also a lipid emulsion that provides a rich medium for microorganisms. A common adverse effect of analgesia and sedatives are delirium (Kaplow & Hardin 2007:688; Marino 2007:895; Urden et al 2010:165). In this study 43.5% of the patients were sedated.

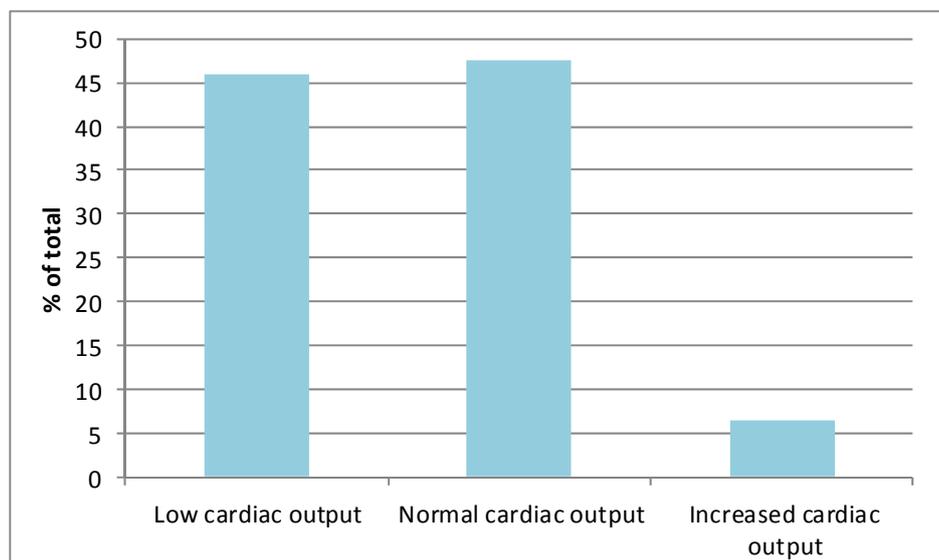
The GCS is used in CCUs to determine the neurologic status of patients. The GCS scoring is based on three elements: eye opening, motor response and verbal response (Kaplow & Hardin 2007:355). A score is calculated in relation to what the nurses assess in each of the three categories with a maximum score of 15/15. CCU flow sheets have a GCS score card where nurses score the patient. An alteration in the neurological status of a patient firstly manifests in the patient's level of consciousness. Changes or new beginnings of headaches, restlessness, irritability, slurred speech and disorientation, an

inability to respond to commands or altered thought processes can all indicate a change in the patient's level of consciousness.

Accurate GCS scoring is of crucial importance to detect early deterioration of the patient's level of consciousness as in most cases it deteriorates before any other neurological changes are noticed (Powers & Schulman 2009:529; Urden et al 2010:700). An accurate GCS scoring is also of vital importance when an Acute Physiology and Chronic Health Evaluation score is calculated to determine the severity of the patient's illness.

- **Cardiovascular system**

The cardiovascular function of 59 (n=59 [47.6 %]) of the 124 (N=124) patients in the CCU under study was normal. Fifty-seven (n=57 [46%]) presented with low cardiac output and eight (n=8 [6.4%]) presented with an increased cardiac output. The document analysis revealed that most patients had either low (46%) or normal (48%) cardiac output. Graph 4.9 illustrates the cardiovascular function of patients in the selected CCU.



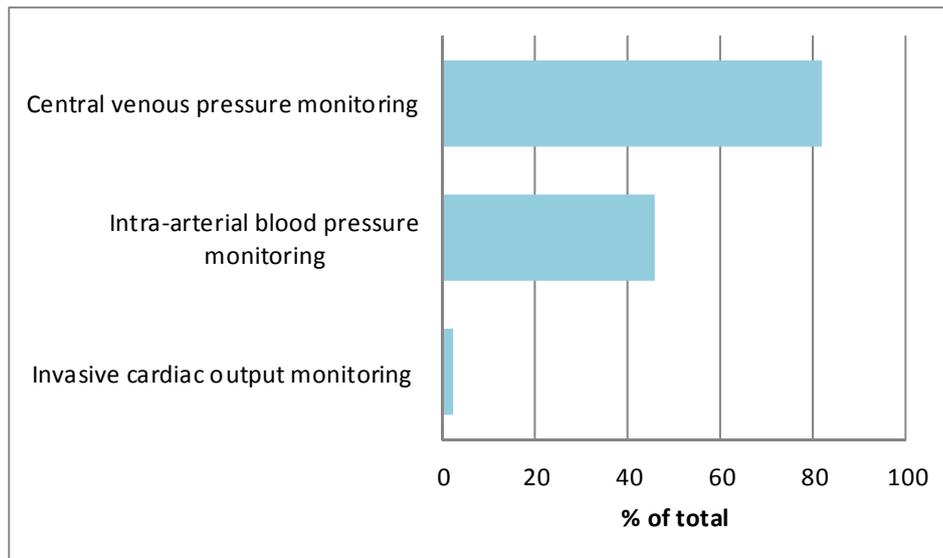
**Graph 4.9: Cardiovascular function of patients in the CCU (N=124)**

**Cardiac output** (CO) is the product of heart rate (HR) per minute and stroke volume (SV); hence  $CO = HR \times SV$ . Stroke volume is defined as the amount of blood expelled by the heart during each beat. The normal SV is 60 to 70 ml and the SV is dependent on three factors: preload, afterload and contractility. In a normal healthy heart when there is

an increased oxygen demand from the tissues with exercise or fever, the heart rate and stroke volume increase to maintain the cardiac output. The critically ill patient's response to an increase oxygen demand is often non-functional, and the nurses in the CCU have to be skilled and knowledgeable to assess these patients; they have to know how to optimise the patients' cardiovascular function. Any decrease in CO will compromise O<sub>2</sub> delivery to the cells and normal cellular metabolism cannot take place (Gallagher 2009:1067; Urden et al 2010:345).

Critical care nurses have to be competent in gathering clinical evidence; they have to be able to think critically and analytically to formulate proper nursing diagnoses regarding cardiac output. Critical care nurses have to prescribe the correct nursing interventions with realistic goals to ensure best patient outcomes (Kaplow & Hardin 2007:139). According to the document analysis, 33.1% (n=41) of the patients received epinephrine and 29% (n=36) received phenylephrine to increase their cardiac output. Vasodilators were administered to 1.6% (n=2) patients with increased cardiac output. It is the shift leaders' responsibility to give appropriate and accurate nursing prescriptions. It is therefore essential that critical care nurses are accomplished and skilled in monitoring and interpreting patients' CO to ensure optimal patients outcomes.

**Cardiac monitoring** is necessary to determine a patient's cardiac output. In the specific CCU in Gauteng, 102 (n=102 [82.3%]) of the patients' central venous pressure was monitored. Of them, 57 (n=57 [46%]) were monitored intra-arterial and three (n=3 [2.4%]) were monitored with an invasive cardiac monitor. The highest number of patients (82%) received central venous pressure monitoring. It should also be noted here that the percentages did not calculate to 100% since individual patients might have received more than one type of monitoring. Graph 4.10 shows the monitoring of the cardiovascular function of patients in the selected CCU.



**Graph 4.10: Monitoring of cardiovascular function (N=124)**

A central venous line is a catheter which is used for **central venous monitoring**. The tip of the catheter should be situated in the right atrium to measure the right atrium pressure. The pressure in the right atrium is the same as the pressure in the superior vena cava and these pressures are collectively called the central venous pressure. With normal functioning of the tricuspid valve the central venous pressure should be equivalent to the right atrium pressure and the right ventricular end-diastolic pressure (Kaplow & Hardin 2007:147; Marino 2007:181). Tuggle (2009:1104) suggests although central venous pressure monitoring is dismissed by some experts in favour of more sophisticated but not widely available technology, central venous pressure monitoring is still the most commonly used parameter to determine the preload of patients. In addition, Marino (2007:181) notes that if a central venous pressure waveform is misinterpreted it misleads practitioners about the patients' right ventricular preload. Tuggle (2009:1105) provides the following guidelines to ensure that treatment decisions based on central venous pressure monitoring is appropriate.

- o Treatment decisions are not based on one single central venous pressure reading but in relation to the patient's clinical picture such as the his or her history, weight, intake and output, external jugular vein pressures and other physical findings.
- o Higher than normal ranges in central venous pressure readings are accepted because of cardiac stiffening that is common in critically ill patients and

diminished right ventricular compliances with mechanical ventilation. Values found to be acceptable are 12 to 15 mmHg.

- o Response to fluid administration is still regarded as a good method to determine patient optimal preload.

In this study the central venous pressure of 82.3% (n=102) of the patients in the CCU were measured. It thus obvious that CCU nurses have to be competent in measuring, interpreting and integrating the central venous pressure findings to formulate an accurate nursing diagnosis related to the patient's preload to ensure optimal cardiac output.

***Intra-arterial blood pressure*** is the continuous measurement of the systole, diastole and mean arterial blood pressure. The mean arterial pressure represents the perfusion pressure throughout the cardiac cycle and is most commonly used to assess organ perfusion. Continuous monitoring of the intra-arterial blood pressure makes it possible for nurses to continuously assess the arterial perfusion to the major organs in the body. The intra-arterial blood pressure is the preferred method of measuring blood pressure in critically ill patients, as compensatory mechanisms in these patients such as vasoconstriction cause variations in Korotkoff sounds that make cuff blood pressure unreliable (Marino 2007:156; Urden et al 2010:326). The normal cardiac cycle is the product of one third systoles and two thirds diastole. To measure intra-arterial blood pressure an arterial line is inserted in the radial, brachial or femoral artery. The inserted arterial line provides direct arterial blood access and is helpful in obtaining blood samples to determine the patient's oxygenation, ventilation, metabolic and electrolyte status.

The intra-arterial blood pressure is measured via a transducer connected to a monitor. The arterial waveform is recorded and reveals the systolic pressure (the highest point), the closure of the aortic valve and the diastole (lowest point). Urden et al (2010:328) advise nurses to follow the trends of the arterial pressure in relation to the rest of the patient's clinical condition and regard it as more valuable than one isolated measurement. There are numerous complications with intra-arterial monitoring such as bleeding, misinterpretations of waveforms, air embolism, infection, and thromboembolism. Kaplow and Hardin (2007:147) urge that nursing interventions must be focused on the prevention of these complications.

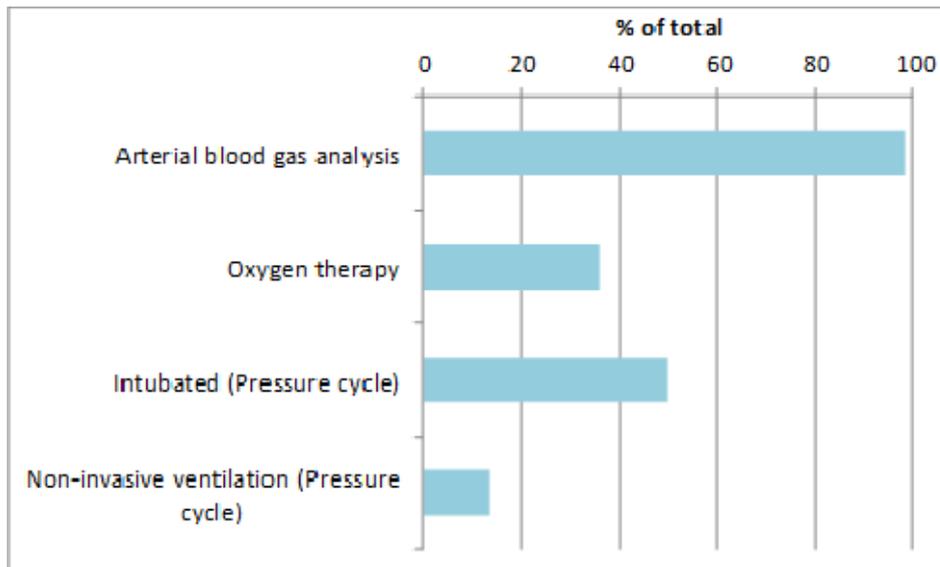
Fifty-seven (46%) patients in the CCU had an arterial line in situ. It is thus important that nurses are able to assess the correct waveform and determine if a low blood pressure is due to poor perfusion or the malfunctioning of the equipment.

The Vigileo is used in the selected CCU for ***invasive cardiac monitoring***. The Vigileo is regarded as a minimal invasive measurement of cardiac output and requires a functional intra-arterial catheter. It analyses the arterial pressure waveform related to the patient's body surface area. The obtained information is used in a proprietary algorithm to provide comprehensive haemodynamic data including the cardiac output, cardiac index, systemic vascular resistance, stroke volume, stroke volume variation and the stroke volume index (Urden et al 2010:352; Walker 2011).

In the particular CCU the Vigileo monitor was used on only 2.4% patients to determine their cardiac output. The nurses valued the role advanced technology plays in providing them with insight into the blood flow and oxygen dynamic of critically ill patients. But, as cautioned by Kaplow and Hardin (2007:155), nurses have to take care to avoid pitfalls that cause technical inaccuracies in value measurement and have to realise that clinical judgment grows with experience.

- **Respiratory system**

A total of 13.7% (n=17) of the patients was supported with ***non-invasive ventilation (pressure cycle)*** and 50% (n=62) were ***invasively mechanically ventilated (pressure cycle)***. Forty-five (n=45 [36.3%]) needed oxygen therapy without support of mechanical ventilation. An arterial blood gas was done on 122 (98.4%) patients. Graph 4.11 illustrates the respiratory status of the patients in the selected CCU.



**Graph 4.11: Respiratory status of patients in the CCU (N=124)**

**Arterial blood gas monitoring** is used to provide information about the patient's oxygenation, ventilation and acid-base balance status. Nurses and doctors also use the arterial blood gas to initiate or to evaluate the effectiveness of therapy (Kaplow & Hardin 2007:284). According to Urden et al (2010:569), the analysis of arterial blood gases can be difficult if nurses are under pressure because it must be done quickly and accurately. Urden et al (2010:569) therefore advise nurses to follow the same method each time when evaluating a blood gas to ensure accuracy every time interpretation is needed. Arterial blood gas analysis was done in 98.4% (n=122) of patients.

**Non-invasive positive pressure ventilation** is used as an alternative method of ventilation. A tight fitted mask is used instead of an endotracheal tube. This mode of ventilation uses a combination of inspiratory positive airway pressure and expiratory airway pressure supplied by a non-invasive ventilator or a mechanical ventilator with a non-invasive function. Patients breathe spontaneously and are supported on inspiration to increase their tidal volume and on expiration to increase their functional residual capacity, resulting in increased PaO<sub>2</sub> levels. The patients' work of breathing is lessened and they have a decreased risk of acquiring ventilator associated pneumonia. Patients receiving non-invasive ventilation must be monitored for work of breathing, increased respiratory rate and oxygenation and ventilation status to ensure best patient outcomes. Heavy sedation of patients should be avoided because non-invasive ventilation is only used on patients who are awake and alert. If non-invasive ventilation is not tolerated by a patient, invasive ventilation is considered (Kaplow & Hardin 2007:302; Urden et al

2010:663). According to Baumgartner (2009:462), non-invasive ventilation is preferred to intubation as it requires minimal sedation and patients have more freedom. Kaplow and Hardin (2007:303) state non-invasive ventilation is not considered in the following patients:

- o patients who have large amount of secretions and are unable to clear their secretions
- o patients with impaired mental status
- o patients who are uncooperative
- o haemodynamically unstable patients who are in need of airway protection.

According to Urden et al (2010:663), patients are very anxious and dyspnoeic before commencing with the non-invasive ventilation; but when adequately ventilated, they calm down. Seventeen patients (13.7%) of patients in this study received non-invasive ventilation.

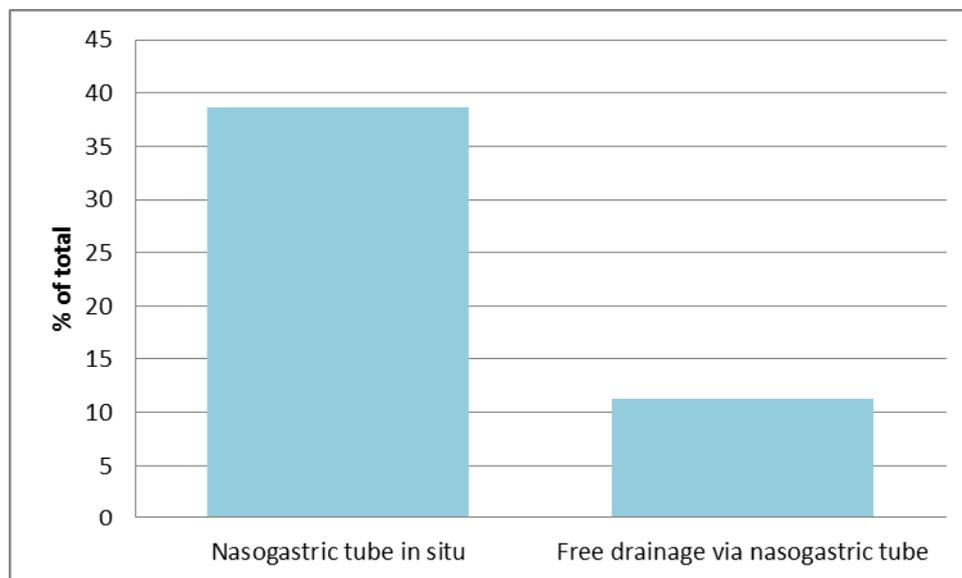
**Intubation** is the insertion of an endotracheal tube down the nasopharyngeal or oropharyngeal airway into the trachea. Baumgartner (2009:459) regards **intubation and mechanical ventilation** as lifesaving therapies frequently administered to patients in respiratory distress and with severe oxygenation and ventilation problems, and also in respiratory muscle fatigue. The clinical objectives for patients on mechanical ventilation include restoring the patient's oxygenation and ventilation status, relieving respiratory distress, preventing or reversing atelectasis, decreasing oxygen consumption, reducing intracranial pressure and stabilising the chest wall (Urden et al 2010:653). The selection of an appropriate ventilator mode depends on the patient's condition, the effectiveness of the modes in relation to the patient, condition and the modes available on the ventilator (Kaplow & Hardin 2007:307). Nurses working in a CCU have to understand the reason for mechanical ventilation, ventilator parameters and modes of ventilation, potential complications of mechanical ventilation, and the process of weaning patients from the ventilator in accordance with the extubation criteria.

Urden et al (2010:653) also grant mechanical ventilation is not without its distinct complications. Physiologic complications include ventilator induced lung injury, cardiovascular compromise, gastrointestinal disturbances, patient-ventilator dyssynchrony and ventilator associated pneumonia.

In this study 50% (n=62) of the patients were intubated and every one of them was ventilated on a pressure cycle mode. From the document analysis it was determined that the nurses working in the selected CCU had to be competent in nursing patients on a pressure cycle mode of ventilation.

- **Gastrointestinal system**

The data obtained from the document analysis related to the gastrointestinal system of the patients revealed that 48 (38.7%) of the latter had a nasogastric tube in situ, and fourteen (11.3%) of the patients' nasogastric tubes were on free drainage. Graph 4.12 illustrates the need of patients to have a nasogastric tube in situ.



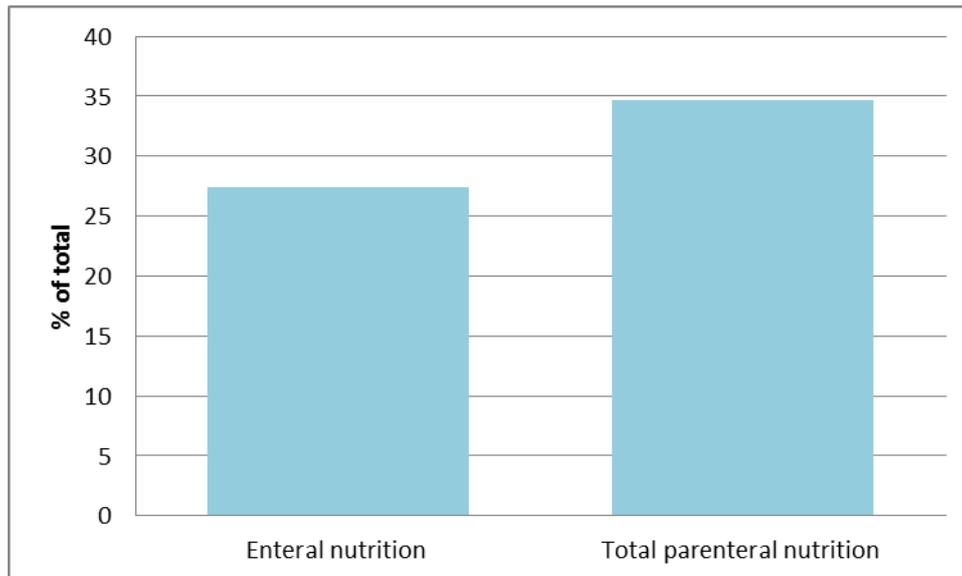
**Graph 4.12: Patients' need for a nasogastric tube in situ (N=124)**

The *nasogastric tube* is a single lumen tube that is inserted via the nose into the nasopharynx and then down the pharynx into the oesophagus and stomach. Nasogastric tubes are used to drain fluid from the stomach and to prevent the accumulation of swallowed air in the stomach (Makic & Carlson 2009:117). A nasogastric tube may partially decompress the bowel and reduce the patients risk for aspiration. According to Urden et al (2010:860), nurses must focus on the prevention of complications such as ulceration and necrosis of the nares, oesophageal reflux, oesophagitis, oesophageal erosion, gastric erosion and parotitis.

Dirks and Howland-Gradman (2009:364) add that nasogastric tubes are inserted intra-operatively if the abdominal cavity is entered during surgery. According to Clark

(2009:116), nurses have to verify the nasogastric tube's placement. This author states the portable radiograph is the most reliable method to do the verification.

The document analysis revealed that 38.7% (n=48) of patients in the CCU had a nasogastric tube in situ. The majority of patients (n=43 [34.7%]) received parenteral **nutrition**. Thirty-four (27.4%) of the patients received enteral nutrition via the nasogastric tube. Graph 4.13 illustrates the nutritional support of patients in the selected CCU.



**Graph 4.13: Nutritional support (N=124)**

**Total parenteral nutrition** is intravenous nutrition that includes carbohydrates, proteins, fats, electrolytes, vitamins and trace elements. Total parenteral nutrition is a hypertonic solution and has to be infused through a central venous line to allow for dilution by the rapid rate of blood flow (Clark 2009:114). Indications to commence total parenteral nutrition are a high-output fistula, intractable emesis and diarrhoea, non-functioning gastrointestinal tract, inability to meet nutritional requirements with enteral or oral intake and unobtainable enteral access.

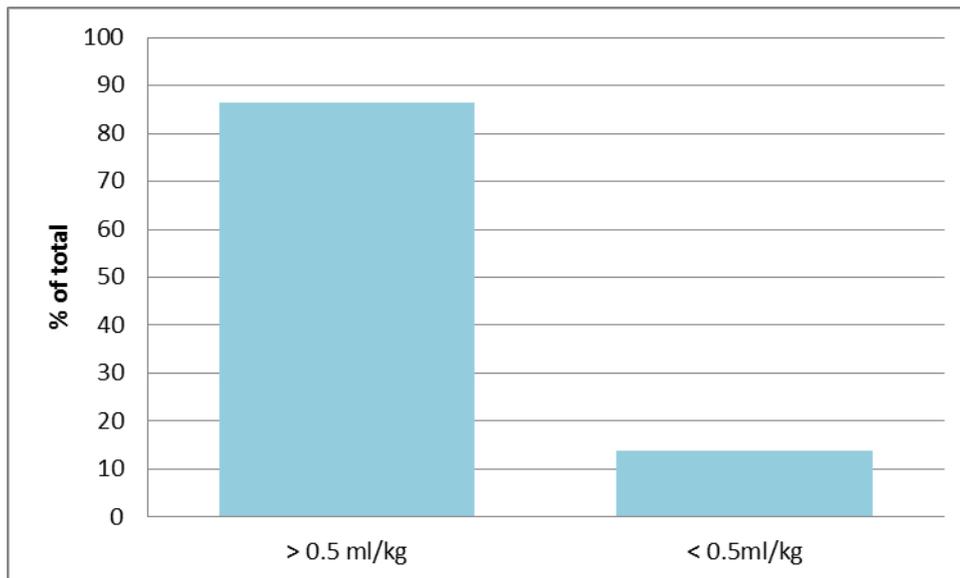
Infection, thrombosis and occlusion of the central line are complications associated with the administration of total parenteral nutrition. Since infection is regarded as the biggest risk, commencing with total parenteral nutrition, central venous catheter care and the change of bags as an aseptic technique is of utmost importance. Urden et al (2010:130) recommend four to six hour blood glucose monitoring as glucose intolerance and electrolyte imbalances are associated with total parenteral nutrition.

In the CCU dieticians calculate the patients' caloric requirements and recommend the correct formula total parenteral nutrition as well as the titration rate. The importance of dieticians as part of the multidisciplinary team should not be underestimated as nutritional intake is a key element in preventing problems associated with under- or overfeeding (Urden et al 2010:131). In this study, 43 (34.7%) patients in the CCU received total parenteral nutrition.

According to Urden et al (2010:123) and Makic and Carlson (2009:117), **enteral nutrition** or tube feeding are used in patients who have gastric motility. Enteral feeds are especially formulated to meet the needs of the critically ill patients. The enteral feeds are rich in glutamine, arginine, amino acids and antioxidant nutrients. Nutrition within the first 24 to 48 hours of critical illness is found to be beneficial to the patients. Nurses have to monitor the gastric residual volume to assess the enteral feeding tolerance. If enteral feeding is not tolerated, small bowel feeding may be indicated (Kaplow & Hardin 207:435). Underfeeding and overfeeding in the critically ill patient contribute to the lengthening of hospitalisation and increase the patient's morbidity and mortality.

- **Renal system**

The **renal output** of 107 (86.3%) the majority (n=107 [86.3%]) of the patients was more than 0.5 ml/kg and 17 (13.7%) of the patients' output was less than 0.5 ml/kg. Graph 4.14 depicts the renal output of patients in the selected CCU of the private hospital in Gauteng where this study was done.



**Graph 4.14: Urine output (N=124)**

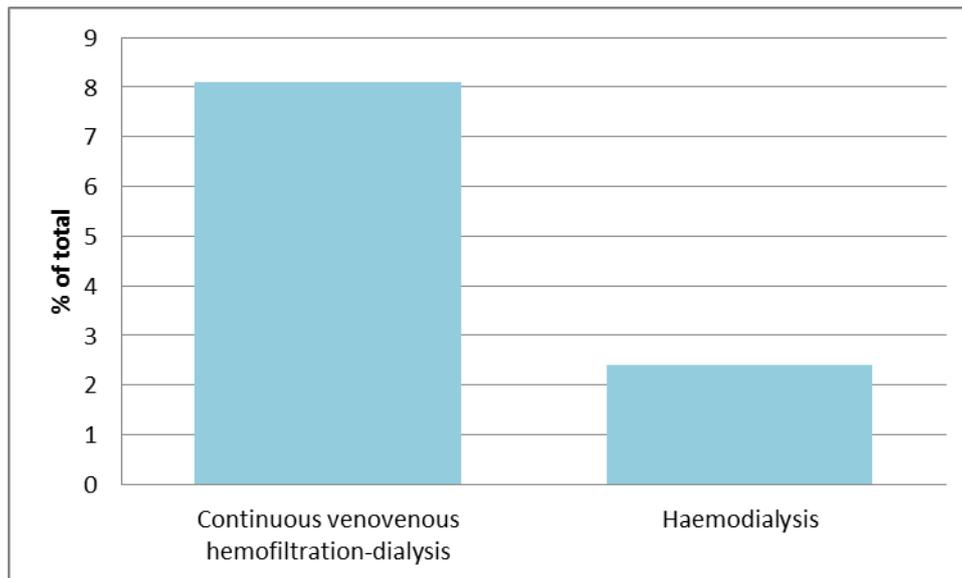
Oliguria is defined as a urinary output less than 0.5 ml/kg/hour and, according to Marino (2007:579), it develops in 5% of patients in CCUs. Acute renal failure has a mortality rate of 60%. Table 4.4 illustrates the causes for oliguria in CCUs.

**TABLE 4.4: CAUSES OF OLIGURIA**

PRE-RENAL DISORDERS	RENAL INJURY	POST-RENAL OBSTRUCTION
Hypovolaemia	Circulatory shock	Papillary necrosis
Mechanical ventilation	Severe sepsis	Retroperitoneal mass
Cardiomyopathy	Multi-organ failure	Urethral stricture
Aortic stenosis	Surgery	Prostatic hypertrophy
Dissecting aneurism	Drug toxicity (for example, nephrotoxic drugs such as aminoglycosides)	
Drugs, for example, anti-inflammatory agents	Myoglobinuria	
	Radio contrast dye	

(Adopted from Marino 2007:581)

Prompt evaluation of the reason for oliguria is vital as prolonged or severe pre-renal causes lead to oliguria renal failure which is not immediately reversible. Marino (2007:579) indicates that oliguria in critically ill patients represent “trouble”. According to the clinical audit, 13.7% (n=17) of the patients in the selected CCU were in “trouble”. Three (2.4%) of the patients received haemodialysis and 10 (8.1%) received continuous venovenous hemofiltration. The majority of patients (n=10 [8.1%]) in the selected CCU received continuous venovenous hemofiltration. Graph 4.15 depicts the patients receiving renal replacement therapy.



**Graph 4.15: Patients receiving renal replacement therapy (N=124)**

Renal replacement is a process of eliminating fluid and waste products from the body using a semipermeable membrane. Renal replacement therapy is indicated in patients with volume overload unresponsive to diuretics and fluid restriction, unmanageable hyperkalaemia, persistent metabolic acidosis, or rapid progressing uraemia. This therapy can be either intermitted or continuous. The intermitted renal replacement therapy used in the selected CCU was haemodialysis and the continuous replacement therapy was continuous venovenous hemofiltration-dialysis (Rothwell & Carlson 2009:906; Urden et al 2010:809).

**Haemodialysis** is an effective method of removing waste products and fluid in patients with acute renal failure. The patients need a large lumen central venous catheter to start the process of filtering their blood through a specialised dialysis filter. A blood pump is used to move the blood in one direction across the semipermeable membrane (Marino 2007:589). The haemodialysis process lasts between three to four hours either daily or every other second day.

Critically ill patients are unable to manage the large fluid shifts and anticoagulation related to haemodialysis and therefore physicians prefer to treat the haemodynamic unstable patients with continuous venovenous hemofiltration-dialysis. The large fluid shift with haemodialysis can lead to hypotension and dysrhythmias and nurses have to closely observe the patients during the initiation of the haemodialysis. Nurses must be ready to adjust vasopressors or to infuse colloids or albumin to prevent further damage

to the patients' kidneys. In the selected CCU the haemodialysis was performed by the renal care specialists (Day & Milam 2009:841; Urden et al 2010:805). Only 2.4% (n=3) of the patients in the selected CCU received haemodialysis.

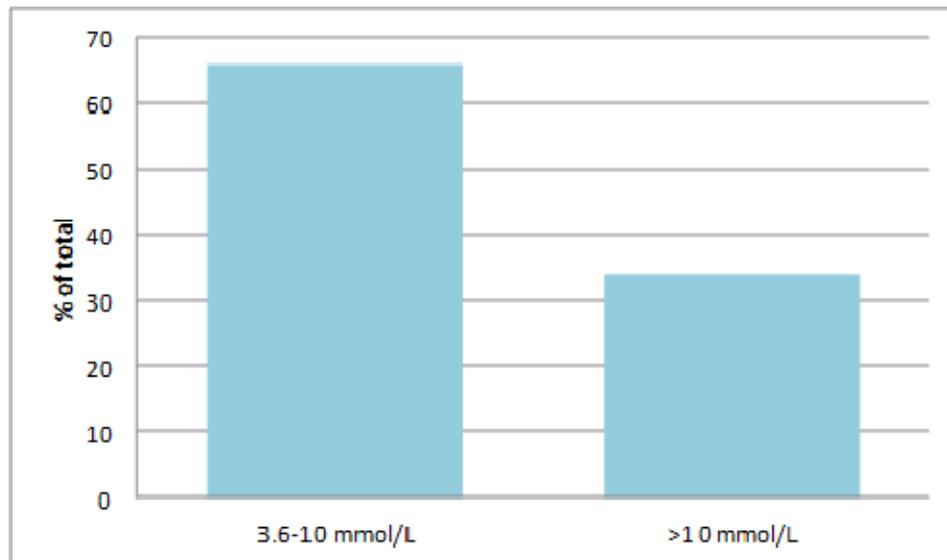
**Continuous venovenous hemofiltration-dialysis** is the continuous removal of fluid and waste products such as urea and creatinine from the plasma. Similar to haemodialysis is the access and return of the patient's blood through a large lumen central venous catheter (venovenous). With the continuous venovenous hemofiltration-dialysis the fluid shift is less than with haemodialysis and is the preferred method of renal replacement therapy if the patients are haemodynamically unstable (Kaplow & Hardin 2007:560).

Continuous renal replacement therapy is initiated by the renal care staff, and the nurses perform the continuous monitoring (Kaplow & Hardin 2007:559; Rothwell & Carlson 2009:905). The risk of bleeding is high in patients receiving renal replacement therapy and therefore patients need close observation and any signs of infection must immediately be reported.

Of the patients in the selected CCU, ten (8.1%) received renal replacement therapy via continuous venovenous hemofiltration-dialysis.

- **Endocrine system**

All the patients in this study (100%) had a **blood glucose test** done. Eighty-two (66.1%) of the patients' blood glucose results were between 3.6 mmol/L and 10 mmol/L, and 42 (33.9%) of the patients' blood glucose tests were above 10 mmol/L. The majority of patients' (n=82 [66.1%]) blood glucose was between 3.6 mmol/l and 10 mmol/L. Graph 4.16 illustrates the blood glucose test results of patients in the selected CCU.



**Graph 4.16: Results of blood glucose tests (N=124)**

According to Manchester and Tracy (2009:932), **hypoglycaemia** is a low plasma glucose concentration below or equal to the lower limit of normal which is 3.6 mmol/L. The signs and symptoms of hypoglycaemia are listed in Table 4.5.

**TABLE 4.5: SUMMARY OF SIGNS AND SYMPTOMS OF HYPOGLYCAEMIA**

SIGNS AND SYSTEMS OF HYPOGLYCAEMIA	
<p><b>Adrenergic symptoms</b></p> <ul style="list-style-type: none"> <li>• Diaphoresis</li> <li>• Tachycardia</li> <li>• Tremors</li> <li>• Anxiety</li> <li>• Pallor</li> <li>• Circumoral tingling</li> <li>• Hunger</li> <li>• Increased respiration</li> </ul>	<p><b>Neuroglycopenic symptoms</b></p> <ul style="list-style-type: none"> <li>• Headache</li> <li>• Dizziness</li> <li>• Cloudiness of vision</li> <li>• Blunted mental activity</li> <li>• Loss of fine motor skills</li> <li>• Confusion</li> <li>• Irritability</li> <li>• Numbness</li> <li>• Fatigue</li> <li>• Slurred speech</li> <li>• Seizures and loss of consciousness</li> </ul>

(Adopted from Manchester and Tracy 2009:931)

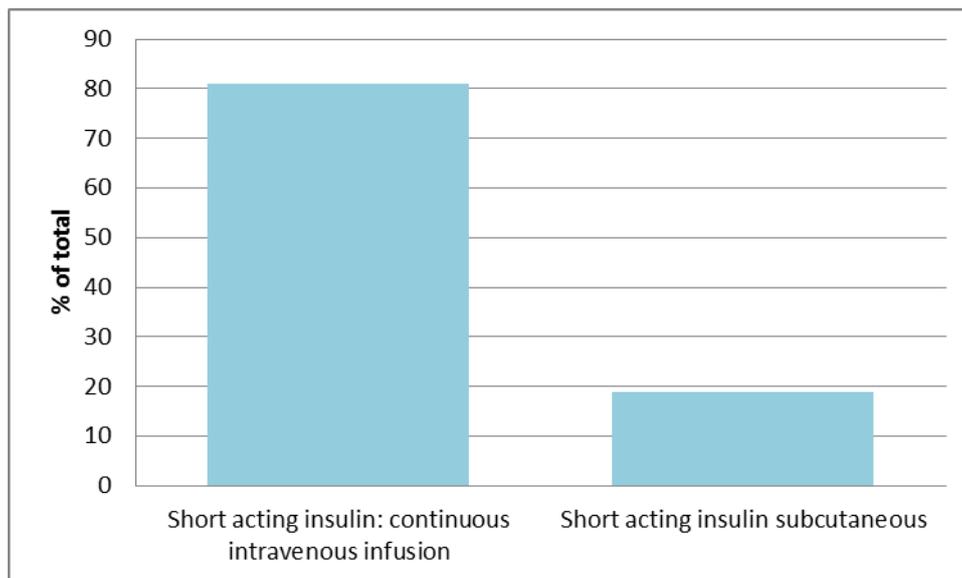
According to the document analysis no incidence of hypoglycaemia was recorded in the selected CCU where this study was conducted.

Urden et al (2010:895) regard a normal fasting blood glucose level higher than 5.5 mmol/L as hyperglycaemia. Critically ill patients' blood glucose are found to be higher than normal due to medication such as corticosteroids and vasopressors such as epinephrine, the stress response and the administration of total parenteral nutrition.

As pointed out by Urden et al (2010:895) and concurred by Manchester and Tracy (2009:933), research has found that hyperglycaemic patients have a higher mortality than patients with normal blood glucose and the former are also associated with poor clinical outcomes. However, with the risk of hypoglycaemia the acceptable blood glucose ranges between 7.8 and 10 mmol/L.

The risk of hypoglycaemia with intravenous insulin is higher and nurses should be especially cautious when patients receive continuous intravenous insulin. Forty-two (33.9%) of the patients in the selected CCU had blood glucose above 10 mmol/L and they had to be treated with insulin.

Thirty-four (n=42 [80.9%]) of the patients received short acting insulin intravenous which made them the majority as only 8 (n=42 [19%]) of the patients received short acting insulin subcutaneous. Graph 4.17 depicts the route of administration for short acting insulin in patients with a blood glucose test result of higher than 10 mmol/L.



**Graph 4.17: Route of administration of short acting insulin (n=42)**

Insulin and amylin are pancreatic islet cell hormones produced by the  $\beta$  cells in the pancreas. Glucagon, the antagonist for insulin, is produced by the alpha cells and somatostatin is produced by the delta cells. Euglycaemia is maintained with the balance of glucose entering and leaving the bloodstream to the action of these hormones. The sympathetic and parasympathetic nervous system also plays a role in insulin secretion. The parasympathetic nervous system plays a role in insulin secretion that occurs at the

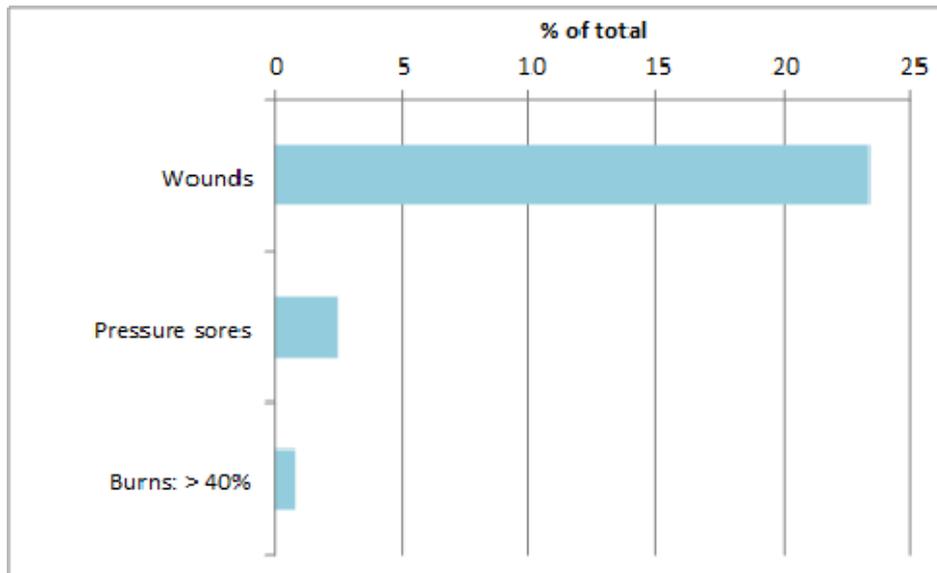
sight and smell of food. In acute stress the sympathetic nerves stimulate glucagon secretion and inhibit insulin secretion resulting in insulin resistance and a rise in blood glucose. Euglycaemia requires an individual to have normal insulin secretion and normal sensitivity to insulin. Regardless of the reason for hyperglycaemia, if insulin secretion or insulin sensitivity is altered, pathogenesis will result (Manchester & Tracy 2009:917).

In this study rapid-acting insulin was used. It is a unique human insulin analogue of deoxyribonucleic acid that rapidly lowers the patient's blood glucose. The insulin binds to receptor cells on muscle and fat cells and lowers blood glucose by facilitating the cellular uptake of glucose while simultaneously inhibiting the output of glucose from the liver. If the insulin is administered subcutaneously the effect is seen after 10 to 20 minutes and the duration of the effect is three to five hours. In the CCU insulin is also administered intravenously with a continuous infusion (Novorapid 2010:3). The nurses have to be vigilant to detect any signs of hypoglycaemia; also, the patient's blood glucose must be checked hourly. Hypokalaemia is among the clinical adverse effects of insulin therapy and must be checked with the administration of insulin.

In this study most of the patients (n=42 [80.9%]) received insulin with a continuous titration intravenously. Manchester and Tracy (2009:927) emphasise that in an acute crisis euglycaemia cannot be maintained with oral diabetic agents.

- **Integumentary system**

The integumentary system relates to the patient's skin and the following information was obtained from the documents: only one (n=1 [0.8%]) of the patients had been admitted with burns more than 40%. Three (n=3 [2.4.5]) developed pressure sores and 29 (n=29 [23.4%]) of the patients had surgical wounds. Graph 4.18 shows the status of the integumentary systems of the patients in the particular CCU.



**Graph 4.18: Status of the integumentary system (N=124)**

The skin plays an important role in the maintenance of body temperature. It acts as a barrier to excessive water loss through evaporation, helps with the production of vitamin D, and is an immunologic barrier protection that prevents microbes from entering the body. The skin further protects the body against the environment through the sensations of touch, pressure and pain. For human survival and for good health, these functions can only be performed by a healthy skin (Kaplou & Hardin 2007:629).

**Burns** result in skin tissues damage and loss. The damage to the skin can be caused by thermal, electrical, chemical, or radiation burn sources. Human burns are classified according to the depth and the size of the burns (Urden et al 2010:1017). The classification regarding the depth of burns is shown in Table 4.6.

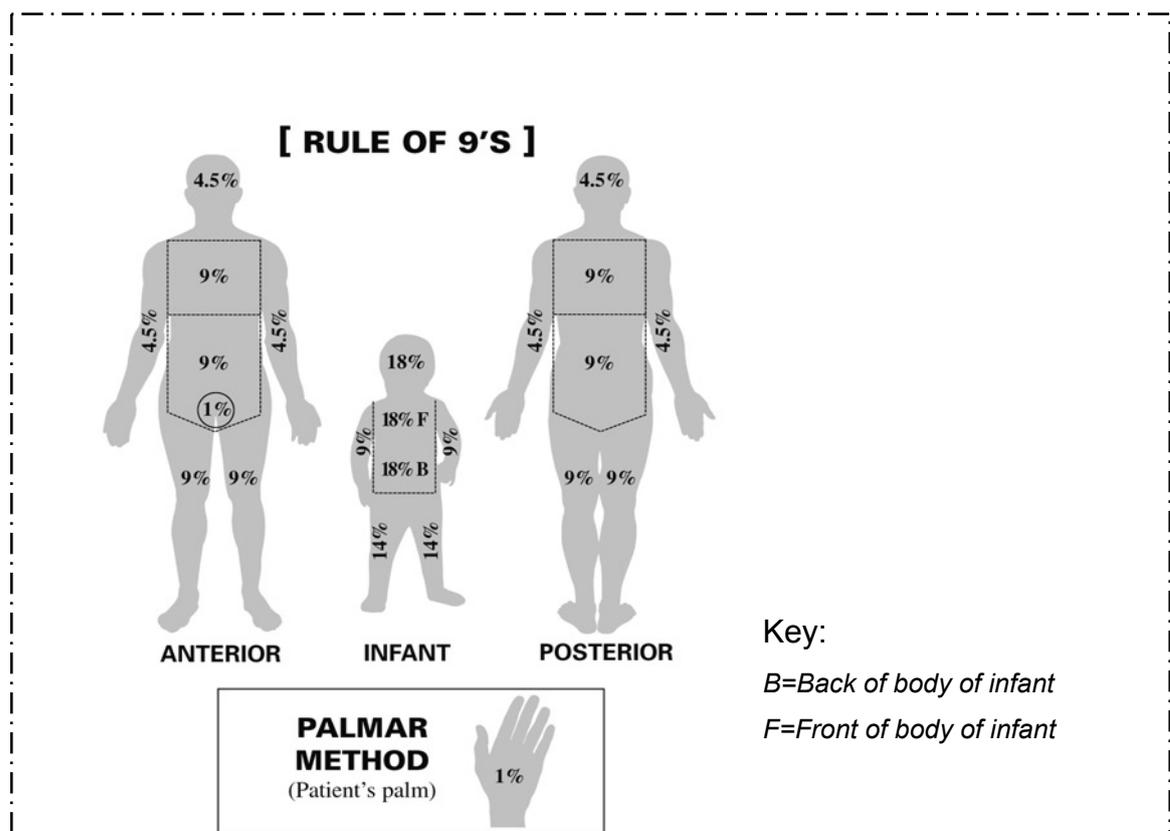
**TABLE 4.6: CLASSIFICATION OF BURNS IN HUMANS**

	<b>FIRST DEGREE BURNS (superficial)</b>	<b>SECOND DEGREE BURNS (partial thickness)</b>	<b>THIRD DEGREE BURNS (full thickness)</b>
Depth	Injury to epidermis – first two to three layers of the five layers of the epidermis.	Entire epidermis and part of the dermis	Destruction of kin layer from epidermis down to and including the subcutaneous tissue

(Adopted from Stout 2009:1223; Urden et al(2010:1018)

The rule of nines (Rule of 9's) is the classification surgeons used in the selected CCU to determine the size of the burns and is presented in Graph 4.19.

According to Urden et al (2010:1019), the patient's age and size are the major determinants of the burn patient's survival. Patients younger than two years and older than 60 are regarded as the most vulnerable while burn injuries greater than 35% can result in burn shock. Nursing care of the burn patients is highly complex and appropriate management of these patients are crucial to prevent kidney injury and cardiovascular collapse. The immediate challenge with a burn victim is fluid resuscitation; the fact is that initial period (the first 24 hours) after a burn has a major impact on the patient's survival and rehabilitation. A multidisciplinary team approach is essential to ensure optimal outcomes for burn patients (Stout 2009:1258).



(<http://www.njburncenter.com/burncare.html>)

**Graph 4.19: Rule of 9's**

Only one (0.8%) burn patient had been admitted in the selected CCU at the time this study was conducted. Burns are best managed by certified burn units in other more specialised hospitals in Gauteng.

**Pressure ulcers** develop quickly in critically ill patients and therefore nurses have to do ongoing and frequent skin assessments. Critically ill patients are predisposed to skin break down due to hypoperfusion, hypoxaemia, decreased mobility, altered nutrition,

and the clotting-bleeding cycle of disseminated intravascular coagulation (Kaplow & Hardin 2007:623). The prevention of pressure ulcers is a priority for nurses; in the selected CCU three patients developed pressure ulcers. (refer to Section 4.4.1.1 for a discussion of the pressure ulcer risk in the selected CCU).

#### **4.4.1.3 Section C: Physical needs**

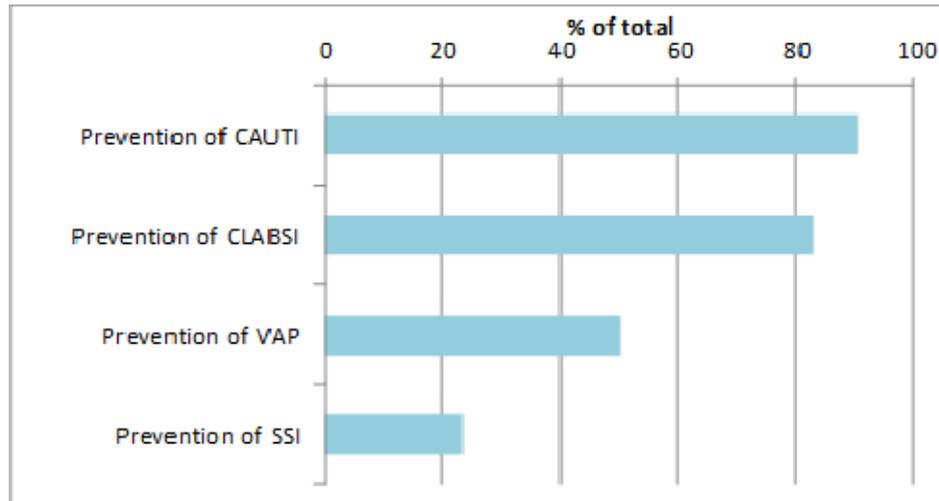
This section addresses the patients' needs related to the nursing care, pain management and diagnostic tests in the CCU.

- **Nursing care**

Lawrence, Good and Carlson (2009:158) consider critical care units as complex and improvement in care processes in CCUs showed enhanced clinical and financial outcomes for patients. Since the end of the 1990s and continuing into the 21<sup>st</sup> century, clinical practice has become driven by evidence-informed outcomes. The focus in clinical practice changed from a disease-base health model to a disease-prevention model for the betterment of patient outcomes (Wiley 2011). A strategy born out of the need for prevention and to enhance patient outcomes was Best Care Always (BCA), a campaign providing implementable preventative strategies that will improve patient outcomes. The BCA campaign is an initiative supporting South African healthcare organisations as they implement specific, internationally recognised, evidence-informed interventions that enhance patient safety and establish best practice in hospital care (Best Care Always 2011a). Accordingly, the nurses working in the selected CCU are committed to deliver these principles of evidence-informed care and therefore it was decided by the participating nurses and the researcher to assess the need for the four BCA best practices listed below.

- o Prevention of surgical site infection (SSI) related to patients having surgical wounds.
- o Prevention of ventilator associated pneumonia (VAP) for intubated patients.
- o Prevention of central line associated bloodstream infection (CLABSI) related to patients having a central line in situ.
- o Prevention of catheter associated urinary tract infection related to patients having a urinary catheter in situ.

Twenty-nine (n=29 [23.4%]) of the patients in the current study had surgical wounds and required wound care focused on the prevention of SSI. Sixty-two (n=62 [50%]) were intubated and required care to prevent VAP. The patients who had central venous lines in situ and required care to prevent CLABSI numbered 103 (n=103 [83%]) while 112 (n=112 [90%]) of the patients required catheter care and had urinary catheters in situ to prevent CAUTI. In Graph 4.20 the nursing care patients required related to BCA is illustrated.



**Graph 4.20: Nursing care patients required in the CCU related to Best Care Always practices (N=124)**

Wound infection is one of the top three causes of adverse events patients' experience that is related to medical management. The occurrence of wound infection leads to disability and an increased length of stay in the CCU. Even more apprehensible is the fact that wound infection can cause a patient's death. BCA (2011b) state 40 – 60% of surgical site infections are, however, preventable. The latest evidence in preventing **surgical site infection**, according to BCA (2011b), is as follows:

- o appropriate timing, selection and duration of prophylactic antibiotics
- o appropriate hair removal – using a clipper and not a razor
- o Post-operative glucose control (only applicable to cardiac surgery)
- o Post-operative normothermia – hypothermia was found in patients predisposed to reduced tissue oxygenation by vasoconstriction, reduced leukocyte production and an increased risk for bleeding.

In this study 29 patients had wounds. The nursing care applied in the selected CCU to prevent surgical site infection was to administer antibiotics timeously and to monitor the duration of antibiotic therapy. The hair removal was done in the general ward pre-operatively.

In the view of Lawrence et al (2009:164), controversies still exist in defining **ventilator associated pneumonia**. Patients are diagnosed with VAP when they have been ventilated for more than 48 hours, when they develop new or progressive pulmonary infiltrate with fever, leucocytosis and purulent tracheobronchial secretions. VAP is the leading cause of death among hospital acquired infections. The IHI identified a **bundle of care** to decrease mortality of ventilated patients. A **bundle of care** refers to the grouping together of individual interventions to obtain optimal patient outcomes; but to obtain the maximum effect, all the interventions must be done – an “all or none strategy” (IHI 2011c).

The four interventions bundled together to prevent VAP are, according to BCA (2011c) and Lawrence et al (2009:166), as follows:

- o elevation of head of bed must be between 30° and 45°
- o daily sedation interruption and assessment of readiness to extubate
- o peptic ulcer disease prophylaxis
- o deep vein thrombosis prophylaxis – unless contraindicated

It was found in the current study that 62 (n=62 [50%]) patients were intubated and needed interventions to prevent VAP. The researcher could not find any evidence in the document analysis that patients developed VAP in the selected CCU.

According to Best Care Always (2011d), the mortality of **central line associated blood stream infection** is 20%, while 90% of catheter related blood stream infections occur with central lines. Lawrence et al (2009:166) state that the insertion of central lines for fluid, blood and medication administration in critically ill patients is imperative, but at the same time they warn there is little doubt that these catheters increase the patient’s risk for complications and infection.

Mortality and morbidity can be decreased by implementing a bundle of interdependent steps in all patients requiring a central line (Lawrence et al 2009:166). These steps are indicated as:

- o hand hygiene
- o maximal barrier precautions
- o chlorhexadine skin antiseptis
- o optimal catheter site selection with the subclavian vein as the preferred site for non-tunnelled catheters in adults
- o daily review of line necessity with prompt removal of unnecessary lines
- o line secure and dressing clean and intact.

In this study 103 (83%) of the 124 patients had a central line in situ and were therefore at risk for CLABSI, but there was no indication on the CCU flow charts whether the patients had developed CLABSI in the selected CCU.

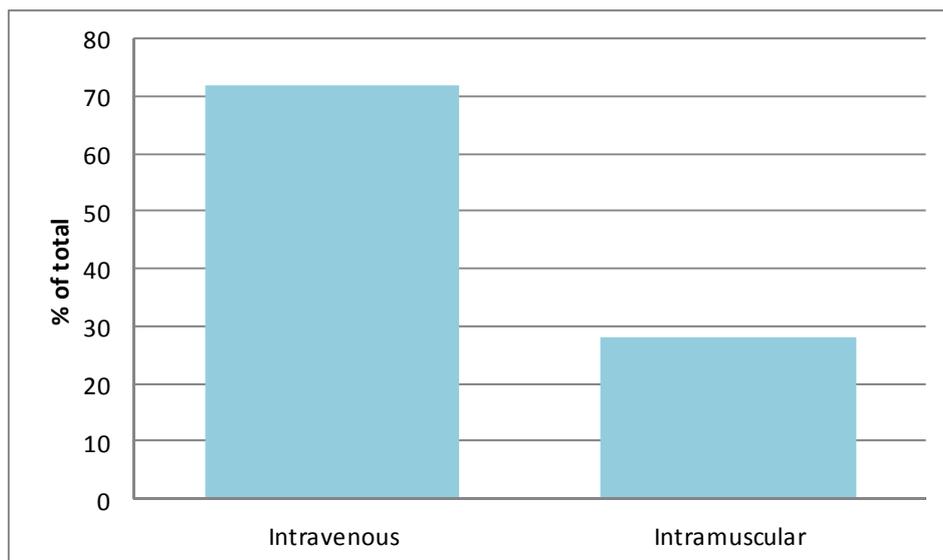
**Catheter associated urinary tract infection (CAUTI)** is infection symptoms related to an indwelling urinary catheter that is in place within the past 48 hours (BCA 2011e). CAUTI is regarded as the most common hospital acquired infection; it not only causes suffering in patients but also increases hospital stay and costs. To comply with the CAUTI bundle nurses have to do the following:

- o avoid unnecessary urine catheters
- o insertion with by using an aseptic technique
- o adhere to the recommended daily care:
- o maintain a closed sterile system
- o keep properly secured bag below bladder
- o frequent emptying of reservoir bag
- o routine meatal/urethral care
- o daily review of catheter necessity and prompt removal.

In this study 112 (90%) patients had a urinary catheter in situ and the researcher could not find any evidence in the document analysis that patients had developed urinary tract infection in the selected CCU.

- **Pain management**

Of the patients in the selected CCU, 35 (n=35 [28.2%]) received their pain medication intramuscularly and 89 (n=89 [71.8%]) received intravenous treatment for their pain. Thus, of the 124 (N=124) patients, the highest number (n=89) received their treatment for pain intravenously and the fewest patients (n=35) received their pain treatment intramuscularly. Graph 4.21 depicts the pain management of the patients in the selected CCU.



**Graph 4.21: Pain management of the patients in the CCU (N=124)**

According to Kaplow and Hardin (2007:41), pain is an unpleasant and emotional experience for patients and is also associated with actual or potential tissue damage. Pain is regarded by these authors as a major problem in CCUs and therefore its detection must be a priority with proper pain relief as an important goal.

Since nurses are the staff at the patients' bedside, they play a vital role in critically ill patients' pain assessment and management. Pharmacological pain management is classified according to three main categories: opioid agonists, non-opioids, and adjuvants (Siedlecki 2009:84; Urden et al 2010:151). Nurses must know the pharmacological action, the side effects, of these medications and have to closely observe how patients respond to the therapy (Siedlecki 2009:84).

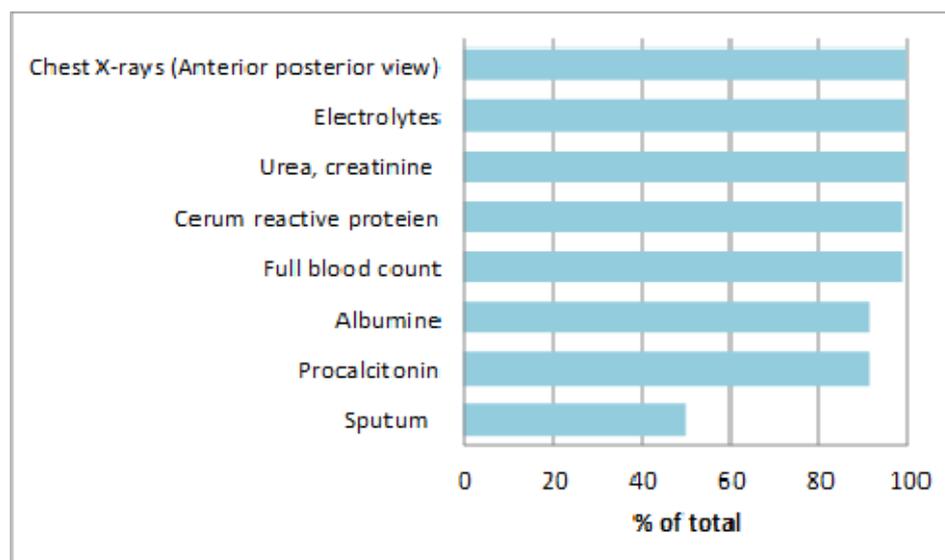
Intravenous pain management was found to be the preferred method of pain management in the CCU and is also, according to Urden et al (2010:151), the most

common route of drug administration in CCUs. The benefit of intravenous administration is the rapid onset of action. However, continuous administration is preferred above bolus administration as the former provides a constant blood level with consistent comfort. Nurses must realise the importance of knowledge related to pain therapies to participate in the pain management of patients and to reach the goal of effective pain relief (Urden et al 2010:151).

- **Diagnostic tests**

In the document analysis the all patients had had chest radiography done. The various blood tests requested by the physicians included albumin, electrolytes, procalcitonin, C-reactive protein, a full blood count and urea and creatinine.

**Chest radiography** was requested for all the patients. For 114 (n=114 [91.9%]) an **albumin test** as well as procalcitonin tests were requested. Electrolytes, urea and creatinine were requested for all the patients (N=124). Additionally, 123 (n=123 [99.2%]) patients had a C-reactive protein and full blood count test done. A sputum specimen of all intubated patients (n =62 [50%]) was sent to the microbiologists for microscopic, culture and sensitivity tests. In Graph 4.22 the diagnostics tests requested by the medical practitioners working in the selected CCU are depicted.



**Graph 4.22: Diagnostic tests requested and conducted in a CCU (N=124)**

- **Chest radiography**

Chest radiography is regarded by Urden et al (2010:410) as the oldest non-invasive method for visualising images of the heart; to date it remains a valuable diagnostic tool. Nurses may be the first to sight and interpret a chest radiograph in the CCU. The chest radiograph is taken in the CCU as patients are too ill to go to the radiology department. The nurse has to ensure the quality of the radiograph and for this reason he or she has to give instructions to the patient to make sure the patient is properly positioned. A chest radiograph assists in the diagnosis of many disorders such as pneumonia, adult respiratory distress syndrome, pulmonary oedema and pneumothorax. Chest radiography also helps with the evaluation of the effectiveness of the treatment (Kaplow & Hardin 2007:677; Urden et al 2010:597).

The chest radiograph is taken from an anterior posterior view which allows for the magnification of the heart and great vessels. In this study chest radiography was done to determine whether the central venous line, the endotracheal tube, chest tubes and enteral tubes were correctly placed. Urden et al (2010:597) note areas that are assessed with chest radiographs are bony structures, the mediastinum, diaphragm, pleural space and lung tissue. It is essential for the nurses to look at the quality of the radiograph in order to reach a correct conclusion. The nurses must know how to use the chest radiograph as evidence to formulate an accurate nursing diagnosis regarding the patient's respiratory system.

- **Albumin**

Albumin is a plasma protein manufactured in the liver. Albumin maintains the intravascular colloid osmotic pressure thereby ensuring that fluid stays in the intravascular space. Being non-permeable, the vascular membrane prevents albumin from leaving the intravascular space. In the critically ill patient the disease processes increase the permeability of the cell membrane and albumin thus moves from the intravascular space to the interstitial space causing peripheral oedema with a decreased oncotic pressure (Urden et al 2010:795).

The low levels of albumin at the beginning of the inflammatory response are more indicative of the severity of the illness than the nutritional status of a patient. The

albumin value of 114 (91.9%) patients in this study was monitored daily in the selected CCU and it provided data to support the persistence of the inflammatory response and the continued catabolism (Clark 2009:124).

- **Electrolytes**

In the body electrolytes are present in bone, muscle and cartilage; it is bound to protein and “free and ionised” in the blood serum (Day & Milam 2009:842). In the current study the electrolytes measured daily in the patients as indicated in the document analysis were potassium, sodium, calcium, magnesium and phosphate. Electrolytes are either positively charged ions (cation) or negatively charged ions (anions). The patient’s blood serum is used to determine the electrolyte values and these measurements are used for diagnosing and treating electrolyte imbalances. Day and Milam (2009:842) further emphasise that the treatment of electrolyte imbalances are focused on prevention and on the patient, and never on the value itself.

**Potassium** is the major intracellular cation and the body’s potassium balance is maintained through active transport and diffusion across the cell membrane (Kaplow & Hardin 2007:350). The kidneys play a vital role in reabsorbing potassium by the proximal tubes and secreting it into the distal tubes. According to Day and Milam (2009:842), the functions of potassium include the following:

- o the potassium gradient regulates the electrical membrane potential of both the muscle and nerve cells
- o potassium contributes to the contraction of skeletal, smooth and cardiac muscles
- o potassium plays a role in intracellular osmolality, enzymatic reactions and in maintaining the acid-base balance.

**Hypokalaemia** is diagnosed with a serum potassium value of less than 3.5 mmol/L (Day & Milam 2009:842). In the selected CCU, to prevent an imbalance in potassium levels, potassium was replenished to maintain a level of 4.0 mmol/L. The replacement of potassium must be done with caution and unit protocols have to be followed to prevent cardiac arrest if the titration rate is too high.

**Hyperkalaemia** is diagnosed with a serum level of above 5.5 mmol/L. Extremes of potassium is life-threatening as it significantly effects cardiac conduction and contraction (Day & Milam 2009:843; Urden et al 2010:773).

**Sodium** is the major extracellular cation. The body's sodium balance is maintained by the kidneys, the adrenal glands and the posterior hypophysis (Urden et al 2010:773). The normal sodium values are from 135 mmol/L to 145 mmol/L. As regards the functions of sodium in the body, Urden et al (2010:773) state it is as follows:

- o sodium is responsible for water regulation in the body
- o it maintains extracellular osmolality
- o it plays a role in neuromuscular activity, enzyme activities, and acid-base balance.

**Hyponatraemia** is diagnosed with sodium serum concentrations of less than 135 mmol/L. The sodium level is decreased in relation to the amount of fluid in the extracellular fluid. Before treating hyponatraemia, the underlying reason must be defined as it influences the choice of treatment (Day & Milam 2009:854).

**Hypernatraemia** is diagnosed with sodium concentrations above 145 mmol/L. Patients have to be assessed to investigate why sodium levels are high to ensure appropriate treatment (Urden et al 2010:773).

The same pathologies (vomiting, diarrhoea or diuretic use for example) that cause hyponatraemia can cause hypernatraemia. The treatment for both hypo- and hypernatraemia is usually extended over 48 hours to prevent a too rapid correction. A too rapid correction of hyponatraemia could cause cerebral dehydration and cerebral damage and with a too rapid correction of hypernatraemia, cerebral oedema might occur (Day & Milam 2009:854; Urden et al 2010:773).

**Calcium** is together with sodium, a major extracellular cation and 99% is stored in bones and teeth. Of the remaining 1% only 43% is ionised and available to act as an electrolyte and, although the remaining 47% is bound to albumin and not available to act as an electrolyte, it is ready to influence the ionised calcium level. It is therefore

important to make a correction to the calcium level when nursing a hypoalbuminemic patient (Urden et al 2010:773).

Body functions of calcium include nerve transmission, cardiac contraction, relaxation and automaticity and platelet aggregation and coagulation. The calcium levels in the body are regulated by the parathyroid glands (Day & Milam 2009:855). Calcium and phosphate acts in an inverse relationship: if the one increases the other one decreases. Calcium balance is also influenced by the levels of magnesium, vitamin D and inflammatory mediators.

**Hypocalcaemia** can be the result of increased renal losses, decreased parathyroid hormones or the binding of ionised calcium to albumin. Pancreatitis and administration of banked blood also decrease ionised calcium levels. The citrate used to preserve banked blood binds to ionised calcium and decreases ionised calcium available to act as an electrolyte. A corrected calcium value of less than 2.15 mmol/L is regarded as hypocalcaemia (Day & Milam 2009:857). Calcium can be replenished orally or intravenously depending on the stability and ability of the patient to tolerate oral intake. According to Day and Milam (2009:859), low magnesium levels must be corrected when hypocalcaemia is found. **Hypercalcaemia** can be caused by cancers and hyperparathyroidism. The increased intake of calcium can also cause hypercalcaemia, for example, women who ingest large amounts of calcium to prevent osteoporosis. A value of above 2.5 mmol/L is regarded as hypercalcaemia and treatment is focused on the cause (Urden et al 2010:403).

**Magnesium** is an essential cation for various enzyme, protein, lipid and carbohydrate functions in the body. It is also vital for the production and use of energy. Magnesium in the body is 67% ionised, 19% protein bound and 14% is in a complexed form. The ionised magnesium is the active component available for biochemical processes (Urden et al 2010:410).

**Hypomagnesaemia** is diagnosed with a serum value of 0.7 to 1.1 mmol/L. Magnesium can be decreased due to diarrhoea, vomiting, chronic alcohol intake or an insufficient intake of magnesium. Hypokalaemia and hypocalcaemia are unresponsive to treatment if hypomagnesaemia is not corrected. Magnesium is the drug of choice in treating torsade de pointes. **Hypermagnesaemia** is not common and it might be due to kidney

failure, tumour lysis syndrome, and excessive intake (Day & Milam 2009:860; Urden et al 2010:405). Furthermore, magnesium levels above 4 mmol/L can lead to respiratory failure and cardiac arrest.

**Phosphate** is an essential source of energy for cellular function in the body and is a crucial electrolyte in the transportation of sodium, potassium and calcium across the cell membrane. Phosphate plays a role in nerve conduction, red blood cell functioning, muscle contraction, metabolism of protein, carbohydrate, and fat. It is a building block of cellular membranes and cellular functions. The kidneys are responsible for the elimination of phosphate. The parathyroid hormone, calcitonin and vitamin D regulate the balance of phosphate and calcium as calcium and phosphate have an inverse relationship (Day & Milam 2009:862; Urden et al 201:774).

**Hypophosphataemia** can be due to a depletion of the body stores or a shift from extracellular to intracellular. Muscle weakening due to hypophosphataemia can be related to patients battling to be weaned off the ventilator because of muscle fatigue. The administration of epinephrine, respiratory alkalosis, and diabetic ketoacidosis shift phosphate from extracellular to intracellular fluid, resulting in hypophosphataemia. Hypophosphataemia is diagnosed with a concentration below 0.8 mmol/L. Phosphate can be replenished orally or if patients are unstable it is replaced intravenously but with caution (Day & Milam 2009:862).

**Hyperphosphataemia** is diagnosed with serum concentrations of above 1.45 mmol/L and is commonly due to renal failure. Increased phosphate levels are also related to tumours, large muscle trauma, and heatstroke. The focus of treatment is to decrease the intake of phosphate and to use phosphate binding agents that bind with phosphate in the intestine thus decreasing serum phosphate levels (Urden et al 2010:774). According to the document analysis in the current study, all the patients had daily electrolytes done (Kaplow & Hardin 2007:460).

- **Procalcitonin**

Procalcitonin is a precursor to the thyroid hormone calcitonin and is produced by the C-cells in the thyroid gland and is present in low levels in the blood. Bacterial infection stimulates the secretion of procalcitonin and an increased procalcitonin concentration in

the serum is used to confirm the presence of severe bacterial infection. Procalcitonin is not markedly elevated with viral infections (Massaro, Costa, Leone & Chamone 2007:137; Procalcitonin 2011).

In this study 114 (91.9%) of the patients had a procalcitonin test done to determine whether infection was present or not.

- **C-reactive protein**

C-reactive protein is an early inflammation marker of vascular diseases such as arteriosclerosis, myocardial infarction and a stroke. C-reactive protein is mainly synthesised in the liver in response to inflammation and is referred to as acute phase protein (Angerio, Bialko & White 2007:161; Munro 2009:211). C-reactive protein tests are requested to evaluate inflammatory processes and the severity of conditions such as myocardial infarction, malignancy and rheumatoid arthritis. C-reactive protein is also done to monitor the patient's response to treatment or to determine whether the acute phase of a disease is declining. Steroids, salicylates, non-steroidal anti-inflammatory medications or statins may cause false normal results. Hormonal contraception may also give a false high value (Donofrio & Labus 2009:60).

In this study a C-reactive protein test was done on 123 (99.2%) of the patients.

- **Full blood count**

A full blood count includes the measurements of haemoglobin, red cell count, red cell size and volume, platelet count, and a leukocyte count with the different leukocytes such as neutrophils, lymphocytes, monocytes, eosinophils and basophils. A full blood count must be interpreted by relating it to the patients' clinical condition and other pathology results (Donofrio & Labus 2009:2; O' Sullivan 2010).

In this study a full blood count was done on 123 (99.2%) of the patients. Table 4.7 provides an example of the parameter in a full blood count with adult normal ranges.

**TABLE 4.7: FULL BLOOD COUNT PARAMETERS**

PARAMETER	NORMAL ADULT PARAMETERS	
	MALE	FEMALE
Haemoglobin g/dL	13.3 – 18.0	11.5 – 16.0
WBC x10 <sup>9</sup> /L	4.00 – 11.00	4.00 – 11.00
Platelets x10 <sup>9</sup> /L	150 - 400	150 - 400
MCV fL	78 – 100	78 – 100
PCV	0.40 – 0.52	0.37 – 0.47
RBC x10 <sup>12</sup> /L	4.5 – 6.5	3.8 – 5.8
MCH pg	27.0 – 32	27.0 - 32
MCH cg/dL	31.0 – 37.0	31.0 – 37.0
RDW	11.5 – 15.0	11.5 – 15.0
Neutrophils	2.0 – 7.5	2.0 – 7.5
Lymphocytes	1.0 – 4.5	1.0 – 4.5
Monocytes	0.2 – 0.8	0.2 – 0.8
Eosinophils	0.04 – 0.40	0.04 – 0.40
Basophils	< 0.1	<0.1

(Adopted from O'Sullivan 2010)

- **Urea and creatinine**

Urea is the end product of protein metabolism; it is formed in the liver from ammonia and excreted by the kidneys. Urea is not a reliable parameter of kidney damage as the urea concentration is influenced by protein intake, blood in the gastrointestinal tract and cell catabolism and it is also diluted by fluid administration (Donofrio & Labus 2009:43; Urden et al 2010:794).

Creatinine is a by-product of muscle metabolism and is excreted by the kidneys. If the kidneys are damaged the creatinine will increase. Creatinine is a more sensitive parameter of renal damage than urea. In this study both urea and creatinine test were done daily on all patients. According to Urden et al (2010:796), with daily assessment of creatinine a trend of kidney function can be followed to determine if the kidney function stabilises, improves or worsens.

- **Sputum**

A sputum test is a bacteriologic examination of a sputum specimen obtained by tracheal suctioning or a bronchoscopy. The laboratory performs a microscopic evaluation of the sputum that includes the culture, sensitivity, gram stain and acid fast bacillus. The culture of the sputum isolates and identifies the organism that causes the pulmonary

infection (McCaghren, Cooper, Craig, Isen, Johnson, Knight, McClintock, Pack & Piano 2009:260).

In this study a sputum specimen was taken from every intubated patient (n=62 [50%]).

#### 4.4.2 Psychological needs

The data to assess the psychological needs of the patients in the CCU were obtained by the researcher from open-ended interviews with patients who were admitted in the CCU or discharged from the CCU between 1 August 2011 and 31 August 2011.

A total of 15 patients were interviewed with the focus on their emotional experiences in the CCU. The inclusion criteria are discussed in section 3.4.7. Table 4.8 provides an overview of the themes and categories identified by the patients regarding their psychological needs whilst admitted in the selected CCU.

**TABLE 4.8: SUMMARY OF PATIENTS' PSYCHOLOGICAL NEEDS**

THEMES	CATEGORIES
Resiliency	<ul style="list-style-type: none"> <li>• Adaptability</li> </ul>
Vulnerability	<ul style="list-style-type: none"> <li>• Lack of information</li> <li>• Language barrier</li> <li>• Depersonalised care</li> </ul>
Participation in care	<ul style="list-style-type: none"> <li>• Interpersonal skills</li> <li>• Respect and consideration</li> </ul>

Based on the findings summarised in Table 4.8 it is evident that the three themes listed below were identified.

- Resiliency
- Vulnerability
- Participation in care

Each of the themes and related categories are individually and briefly discussed next.

#### 4.4.2.1 *Theme 1: Resiliency*

Kaplow and Hardin (2007:5) define resiliency “as the capacity patients have to return to a restorative level of functioning using coping mechanisms”. These authors view resiliency as the ability to adapt in order to meet challenges. Kancir and Korsgaard (2010:439) found that the physical resiliency of critically ill patients discharged from the CCU to the ward was severely limited.

From the definitions and view of resiliency **adaptability** was coded as a category regarding resiliency.

##### ▪ **Adaptability**

Watson (2011:1) regards enforced dependency, isolation of loved ones, the threat of death and being onlookers as other critically ill patients pass away as reasons contributing to their need to adapt psychologically to their illness. Ward (2006:1) emphasises that the root competence for adaptability is the ability to liaise with and have resiliency to absorb external shock. This author states that adaptability goes beyond “the capacity for internal change in response to external conditions”.

In interviewing the patients, they seemed to realise that they had to adapt. Moreover, from their verbalisations it appeared as if they believed they could adapt if supported by nurses and their families. Concerning the process of adapting to being in the CCU the patients said they had to concentrate on positive thinking and avoid negative thinking. The patients further expressed a profound need to be supported in their process of adapting to their circumstances. The patients said they wanted goals and it would have helped if they were informed by nurses about their progress. The patients’ reflections related to adaptability are illustrated below to support this category.

- 
- *“...en te konsentreer op die positief, weg te bly van die negatief...” (“...to focus on the positive, to avoid the negative...”.)*
  - *“...maar gelukkig het ek [die pasient] later aangepas...” (“...but fortunately I [the patient] did adapt later on...”.)*
  - *“...nobody said to me [the patient] for how long I am going to be intubated...”*
  - *“...little things...going down the passage twice will motivate me...”*
-

- 
- "...nurses must be more persons people than task people... there was a time that I [the patient] need only five minutes for my husband to hold my hand...talk to him...nurses need to change their attitude, they [the nurses] have to make it better for our patients..."
  - "...you know what, I [the patient] will be glad if I wake up and a nurse stands next to me telling me, I am Sister so and so ... I am going to take care of you tonight..."
  - "...My [the patient] experience in ICU wasn't well, I didn't, didn't enjoy it at all...I couldn't adapt..."
- 

#### 4.4.2.2 **Theme 2: Vulnerability**

According to Spiers (2000:715), the Latin root of the word vulnerability, **vuln**, means wound and **vulnare** means "to wound". Spiers regards vulnerability as a fundamental aspect of how people experience health and a key concept in nursing. The term 'vulnerability' refers to the identifying of individuals and groups at risk of harm. In addition, Rogers (1997:65) adds being vulnerable means that one is able to be physically or emotionally hurt. Plomp and Ballast (2010:261) found in their study that if no vulnerability is experienced, there is no need for trust; in fact, the more vulnerable people are the more they are willing to trust because they need support. Critically ill patients are vulnerable because they are dependent on nurses' support and caring as they can be considered in a certain sense to be "wounded".

Three categories related to **vulnerability** were identified, namely:

- a lack of information
- language barriers
- depersonalised care.

A discussion of each identified category is presented next.

- **Lack of information**

According to Fontaine (2001:21) and McKinley, Nagy, Stein-Parbury, Bramwell and Hudson (2002:27), the lack of information fosters fear and anxiety in critically ill patients; but if patients are kept informed of what is occurring to them, vulnerability decreases. Critically ill patients have a definite need to be informed and know what progress they make and what are expected from them during their time of stay in the CCU as well

after they have been moved to the ward. Nurses, being the closest and most in contact with these patients, have to constantly remind them of what is happening to address the need of knowing (Hupcey & Zimmerman 2000:198). In addition, Doering, McGuire and Rourke (2002:336) state patients want information that is tailored to their individual needs and level of understanding. The patients' need to be informed was expressed in their reflections during the interviews and is consistent with the findings in literature.

- 
- "...nobody tell[s] me [the patient] anything..."
  - "...nobody came to tell me [the patient]..."
  - "...I [the patient] just don't know what was happening..."
  - "...nobody sit down and tell me [the patient] what's wrong..."
  - "...but the basic need of what is happening to me [the patient]..."
  - "...there was [a] couple of time where the sisters went off and did their own thing, and one [patient] was left alone..."
  - "...feelings of helplessness and out-of-control..."
- 

- **Language barriers**

Language is the means by which patients and nurses communicate. As Burchfield (2003:Preface) asserts, in its "spoken form, in a variety of regional accents, it remains an effective instrument" for communication in all spheres of life. It would therefore be appropriate to posit that oral communication is important between the patient and the nurse, especially where the critically ill patient who is still in the CCU or who has recuperated sufficiently and has been moved to a ward. Kaplow and Hardin (2007:98) reinforce this statement by observing that effective communication among nurses, patients and families are vital during critical illness.

Differences in languages can result in misunderstandings, miscommunication and in general negatively influence understanding between healthcare providers and patients; ineffective language usage and/or understanding increasingly impose barriers on healthcare, thus influencing patient outcomes. After all, to build up a successful relationship with the patient and to function efficiently as a nurse, nurses must maintain or hone the skills that help them to say what they mean and to understand what the patient is saying to them. Lineberry (2009:474) states language barriers can affect the healing process as misunderstandings may occur. The author stresses the fact that

cultural competency includes the ability of the nurse to cross the language barrier during hospitalisation by knowing how to address problems that arise due to language barriers.

In the current study the patients' reflections revealed that they experienced language barriers as intimidating. This is evidenced by the following quotes from the patients:

- 
- "...working with people [the patients] who don't understand you [the nurse]..."
  - "...intimiderend, hulle [die verpleegsters] praat hulle eie taal...". ("...it's intimidating; they [the nurses] talk their own language...")
  - "...They [the nurses] talk their own language. They didn't know I could understand Sotho and Zulu... you [nurses] working with people who don't understand you...and you talk to the person [nurse] next to you, not with the person [the patient] you are busy helping...I felt so inferior...everybody talks about you [the patient], but not with you..."
  - "...they [the nurses] talk loudly and in their own language...if someone [patient] is semi-conscious or in a coma...or sedated...that will stress them out..."
- 

- **Depersonalised care**

To 'depersonalise' something or someone means to make it "impersonal or present as an object" (AudioEnglish.net 2011). The *Concise Oxford English Dictionary* (2006:384) explains 'depersonalise' as "divest of human characteristics or individuality". In other words, 'depersonalised care' would refer to the caregiver (the nurses in this context) rendering care as if to objects (the critically ill patients in the CCU or who had just been moved to the ward) that have no feelings, emotions or needs.

According to Dunham-Taylor and Pinczuk (2006:28), patients often feel depersonalised; they experience long waiting times, feel that nurses do not listen or care about their condition or need and, in general, simply experience little personal involvement in their recovery from the nurses' side. Confirming this view, Rispel and Schneider (cited in Marks 1994:212) state "nursing has become more like a production line in a factory ..." leaving little time for bedside work and/or family contact. Doering et al (2002:336) add that patients expect doctors and nurses to acknowledge them as individuals and that caring are related to effective communication and personalised care. In this study patients felt they were not treated as human beings but as objects or items. One patient verbalised that he felt as if he was treated "*like a piece of meat*" while another shared that he could just as well have "*been a vase*" so little attention was paid to him. Using

words that refer to inanimate objects (“*meat*” is the flesh of a dead animal and “*vase*” is a decorative holder for flowers) the patients elaborated on the depersonalised care they experienced. The patients’ reflections on their experiences of care in the CCU are noted below.

- 
- “...*there were times I felt like a piece of meat...*”
  - “...*nobody talks to you, everybody talks about you...*” (“I emphasise”)
  - “...*kon ‘n blompot gewees het...*” (“...*could have been a vase...*”).
  - “...*and you [the nurse] talk[s] to the person [colleague] next to you, not to the person [the patient] you are busy helping...*”
  - “...*you [the patient] are not outside the process [nursing process]...*” (“I emphasise”)
- 

#### **4.4.2.3 Theme 3: Participation in care**

According to Longtin, Sax, Leape, Sheridan, Donaldson and Pittet (2010:53), the American US National Library of Medicine defines ‘patient participation’ as the “involvement of the patient in the decision process regarding health issues”. These authors found that various factors influence patients’ participation. However, they also found that 52% of the patients in their study still delegated decisions to their physicians. It is the stance of Larson, Sahlsten, Segesten and Plos (2011:1) that nurses’ behaviour stimulates or inhibits the patient’s participation in care. In the Western world patient participation is regarded as a legal right. According to the National Health Act, Act No 61 of 2003, Chapter 2 (South Africa 2003:1) patients have basic healthcare rights including the right to participate in decisions regarding their health.

With regard to participation in care two categories were identified and they are discussed separately.

- Interpersonal skills
- Respect and consideration
  
- **Interpersonal skills**

Hargie (2011:5) explains that although “social skills”, “interpersonal skills” and “communication skills” are used interchangeably; “interpersonal skills” per se refer to the

skills people employ when interacting with other people. Nurses are regarded as interpersonally skilled when they demonstrate the ability to use evidence informed styles of communication with patients and colleagues (Wysong & Driver 2009:29). Essential communication skills include listening and attending, empathy and information giving (Bach & Grant 2009:13).

In a study conducted by Wysong and Driver (2009:29) on patients' perceptions of nurses' skills in a general hospital in Indiana, USA, nurses were regarded by patients as very skilled if they were friendly, caring, compassionate, kind, and good listeners. In other words, it can be assumed that the patient's perception of what a 'skilled' nurse is centres on the nurse's interpersonal skills and not on her or his technical skills. This echoes Marks (1994:213) who refers to Moore's (1988) view that patients intuitively know that, to meet their needs, they need the doctor's scientific expertise as well as the *nurse's sympathy*. ("I emphasise"). Yet, the researcher wants to point out that in the nursing environment '*sympathy*' does not suggest 'feelings of pity and sorrow' (*Concise Oxford English Dictionary* 2006:1459) but it reflects that nurses should have and demonstrate a caring character that reflects, amongst others, compassion, competence and commitment. Effective verbal and non-verbal communication is part of being a confident, compassionate nurse. Such communication is further regarded by Pullen and Mathias (2010:4) as an important benchmark in the nurse-patient interaction. When communication is effective it enables the patient to be an equal partner in achieving wellness (Pullen & Mathias 2010:4) by relieving their anxiety, supporting them spiritually and positively affect their healing and recovery. It is important to remember that communication includes speaking as well as listening. At issue in this study for the patients was that they had a strong need for nurses to listen to them.

- 
- "...I was definitely disorientated and nobody [no nurse] really came to me and told me listen..."
  - "...one of my wishes is that the staff in ICU would listen..."
  - "...maybe they [the nurses] should listen, they don't listen..."
- 

- **Respect and consideration**

According to the ICN (2006), respect is inherent to nursing. Nursing is a respectful profession and unrestricted by the consideration of age, colour, creed, culture, disability or illness, gender, sexual orientation, nationality, politics, race or social status. McGee

(1994:681) emphasises that a lack of respect dehumanises patients and may contribute to ill treatment. The foundation of transcultural care is mutual respect. Pullen and Mathias (2010:4) further encourage a relationship between nurses and patients based on trust and mutual respect. Nurses have to assist patients in their physical, emotional and spiritual needs through their knowledge and skills.

Consideration is defined as “careful thought or attention or compassionate regard for someone or something” (*Your dictionary* 2011). In this study the patients regarded too much noise as a lack of respect and consideration for them. They verbalised that they perceived the sharing of information about visitors and hospital procedures such as a bed wash by the nurses as a sign of respect being shown to them. The patients’ reflections revealed a need to be respected and to be considered when critically ill.

- 
- “...geraas, geen begrip dat ‘n pasient siek is nie...” (...noise, no understanding [consideration] that a patient is sick...)
  - “...just tell me, ‘I [the nurse] am going to wash you’ ...”
  - “...my husband was standing and waiting outside while they [the nurses] [were] bathing me, and when he came to see me, he had to leave because visiting time was over...”
- 

#### 4.5 Cycle 1: THINK ABOUT FAMILIES’ NEEDS

Molter (2009:146) points out that the critical illness of a family member is indeed a crisis for the whole family. The way the multidisciplinary team interacts with them has a significant impact on how the family will respond to the crisis and adapt to the various changes in the family routine. Hupcey (1999:254) found that nurses and families have different views of the role of the family in a critical care unit. On the one hand the family feels they play an important role while, on the other hand, the nurses want to maintain control of the environment and their perception of the patients’ needs. Molter’s (2009:156) emphasises the importance of providing care to the families and patients as a unit because it influences long-term outcomes for the family. Additionally, Kaplow and Hardin (2007:17) regard families as an integral part of the patients’ world and support system, and not mere visitors. Families are also viewed by Hickman and Douglas (2010:80) as caregivers, decision makers and persons who have to deal with the psychological stress of uncertainty on a daily and hourly basis. Equally important, healthcare organisations want satisfied customers and meeting the needs of the

families is therefore seen as essential for the patient as well as the family dynamics (Auerbach, Kiesler, Wartella, Rausch, Ward & Ivatury 2005: 202).

As discussed in Section 4.2 the patient and family are viewed as a complete entity. Table 4.9 summarises the families' needs in the selected CCU in Gauteng.

**TABLE 4.9: SUMMARY OF FAMILIES' NEEDS**

THEME	CATEGORIES
Vulnerability	<ul style="list-style-type: none"> <li>• Remaining near the patient</li> <li>• Need for information</li> <li>• Need for reassurance</li> </ul>

Based on the findings summarised in Table 4.9 it is evident that one broad central theme emerged, namely, vulnerability. The theme and its related categories are discussed below.

#### **4.5.1 Theme: Vulnerability**

The concept of vulnerability is discussed in Section 4.4.2.2. Titler, Cohen and Craft (1991:174) found in a study they conducted on the perception of patients, spouses and children after critical care admission that families experience admission in critical care as an overriding threat characterised by vulnerability, intense emotion, fear and anxiety. According to Medina (2005:100S), the fear of death, uncertain outcomes, emotional turmoil, role changes, disruption of routines and an unfamiliar environment contribute to families' vulnerability. Three categories relating to the theme **vulnerability** were identified.

- Remaining near the patient
- Need for information
- Need for reassurance

These categories are discussed in more detail next.

#### 4.5.1.1 *Remaining near the patient*

According to Kaplow and Hardin (2007:18), the rigid visiting policies stipulating that access to the CCU is granted based on rules rather than on patient needs sets up conflict between the patient, family and nurses. Leske and Pasquale (2007:33) state the need of families to be in the presence of the critically ill family member is a reflection of the linking and maintaining family relationships. Allowing them to remain near the patient helps the family members to stay emotionally close and provide support to their loved ones. In this study the needs of family members were consistent with literature; the nurses recognised these needs when the data obtained from the families' reflections were analysed.

- 
- "...I [family member] *just wanted to be there...*"
  - "...when my grandson came to see him [the patient] *just seeing his little face... [the patient's] face just lit up...*"
  - "...and they [the nurses] *don't let me [family member] close to him [the patient]...*"
  - "*dit is miskien nie vir hulle [verpleegkundiges] erg nie, maar vir ons [familie] is dit erg.*" (*It may not be bad for them [the nurses], but for us [family] it is very bad...*)
- 

#### 4.5.1.2 *Lack of information*

Molter (2009:153) defines 'informing families' as "the behaviour of providing information about the patients' condition and treatment". Dialogue is regarded by Molter (2007:153) as a prerequisite to orientate families to the situation and encourage them to share their stories. Auerbach et al (2005:202), stressing that meeting the needs of the family is the dual responsibility of the doctors and nurses, also observe that the access to clear, understandable and honest information about the patients' medical condition is a basic need of families. The ways in which the nurses and doctors communicate this information build mutual trust between the nurses and patients and are seen as crucial factors to help families to adjust to the stressful situation in the CCU. Some of the perceptions of the families with regard to the lack of information they received are noted below.

- 
- "...I [family member] *didn't hear a word from a doctor, a nurse, a nothing, I was panicking...*"
  - "*It was the worst for me. Is he [the patient] going to live? Is he going to make it?*"
-

- 
- "...he [the patient] couldn't talk and I thought, 'Oh, my word is there something wrong with his speech?'"
  - "...why I [the wife] was only told now that his [the patient's] infection count in there [the CCU] was above 200.... why wasn't I told when he was there [the CCU], when he was so dopy, and sick, and looking terrible?"
  - "I [the wife] think the doctor use my husband as a guinea pig... now this ... then that... how many antibiotics?"
  - "Why must us [we] [the family] phone him [the doctor]? Why do we have to ask him [the doctor]?"
- 

#### 4.5.1.3 Need for reassurance

Leske and Pasquale (2007:33) interpret the families' need for reassurance as their need for reinforcing hope about the patient's outcomes. If nurses successfully meet this need it results in a relationship characterised by trust and confidence between the healthcare team and family members. Hickman and Douglas (2010:80) found that the best time to meet with the patient's family and establish an empathetic relationship is the first few days after the patient has been admitted to the CCU. In the view of Mitchell, Chaboyer, Burmeister and Foster (2009:544) proximity helps to reassure family members; hence, some family members want to stay close to the patient because this reassures them that the patient receives the best care possible. Nurses have to communicate positive changes and encourage the family to participate in caring for the patients (Kaplow & Hardin 2007:19).

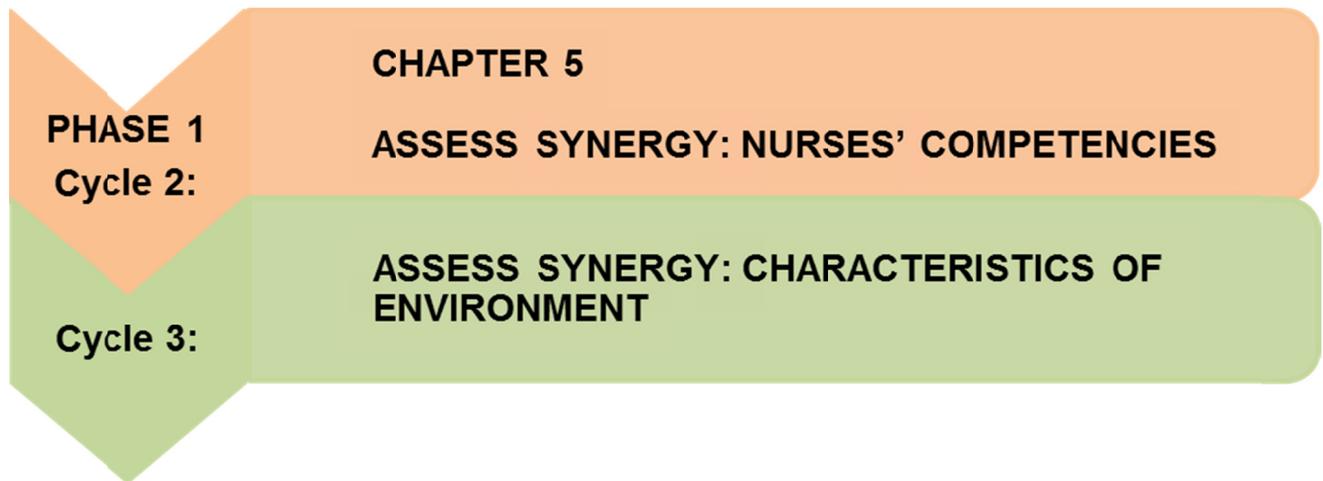
- 
- "...there was no communication, and I [family member] found it very stressful to me..."
  - "...the communication between the staff and the patients' family are very bad..."
  - "...she [the nurse] just came to me [family member] and give [gave] me this big bear hug...that was just so awesome..."
  - "...they [are] constantly monitoring him, and that make[s] me feel better, happier..."
- 

## 4.6 SUMMARY

The cyclic approach of **LOOK**, **THINK** and **ACT** was used by the researcher in this action research study to address the challenge to enhance synergy in the selected CCU in Gauteng.

In this chapter **PHASE 1: Cycle 1: Assessment of synergy was presented**. The focus was on the assessment of patients' needs in a selected CCU in Gauteng. Initially, the researcher used the **LOOK** phase of the cyclic routine to assess what the patients' needs were in order to gather relevant information; this information was then used to build a picture of the patients' needs. Based on the theses findings, the researcher continued to **THINK** critically about the patients' needs.

The needs of the patients in the selected CCU was presented and discussed in Chapter 4. Being aware of the patients' needs first helped the researcher to assess the nurses' competencies **in relation** to the patients' needs. The assessment of the existing synergy in the selected CCU in a hospital in Gauteng is continued in Chapter 5 with and assessment of the nurses' competencies and the characteristics of the environment.



“It may seem a strange principle to enunciate as the very first requirement in a hospital is that it should do the sick no harm.”

Florence Nightingale (1860)

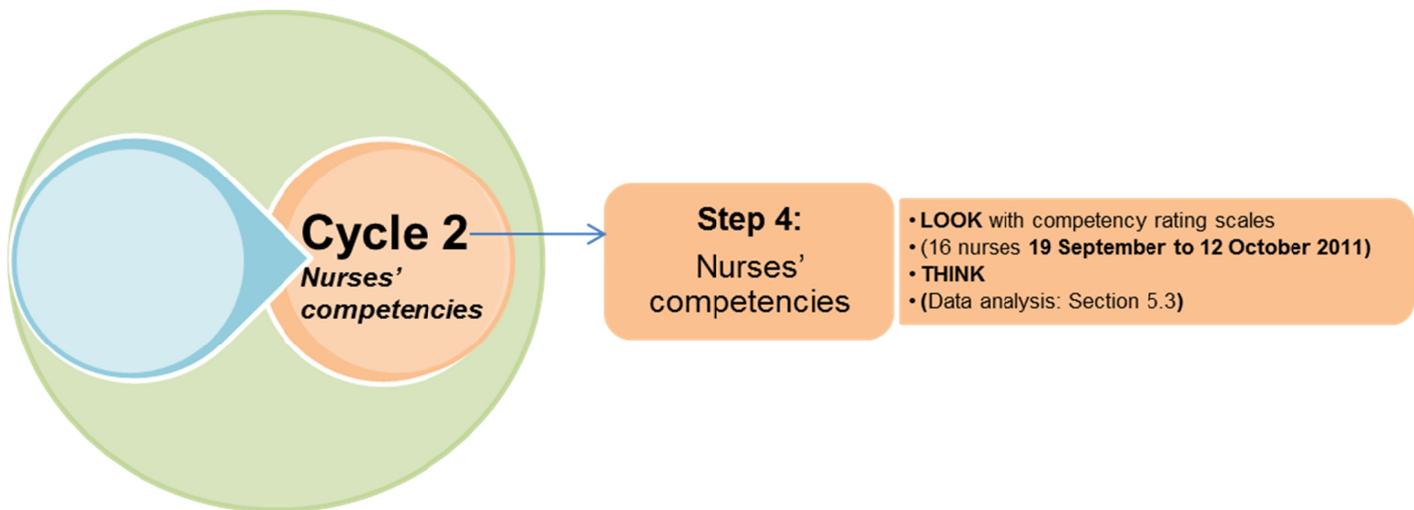
## 5.1 INTRODUCTION

Chapter 4 focused on the assessment of the patients' needs in a selected CCU in a specific hospital in Gauteng. In Chapter 5 the focal point is on **PHASE 1: Cycle 2**, the assessment of nurses' competencies and **PHASE 1: Cycle 3**, the characteristics of the environment. The **LOOK** at and **THINK** about the nurses' competencies driven by the patients' needs are presented first, followed by the **LOOK** at and **THINK** about the characteristics of the environment. The data gathered and analysed in this chapter completed the picture to assess the existing synergy in the selected CCU.

## 5.2 Cycle 2: STEP 4: LOOK AT NURSES' COMPETENCIES

Although the research method was fully discussed in Chapter 3, the contents and flow of Cycle 2 is reiterated in Figure 5.1.

Figure 5.1 is a visual description of the contents of Cycle 2.



**Figure 5.1: Summary of the steps in Cycle 2 of this study**

### 5.2.1 Timeframe

The timeframe during which Cycle 2: Step 4: Assess synergy: Nurses' competencies took place was from 19 September 2011 to 12 October 2011. It is summarised in Table 5.1 and discussed in Section 5.2.3 and Section 5.3 of this chapter.

**TABLE 5.1: Cycle 2: STEP 4: NURSES' COMPETENCIES**

LOOK	THINK	OUTCOMES
Date: 19 September 2011 to 30 September 2011	Date: 3 October to 12 October 2011	1. Determine the nurses' competencies in relation to the patients' needs
Objective: 1. Reflect on patients' and their families' needs (refer to Section 5.2.2)  2. Assess nurses' competencies (refer to Section 5.2.3)	Objective: 1. Analyse the nurses' competencies (refer to Section 5.3)	

The researcher first had to reflect on the patients' needs before the nurses' competencies could be assessed because, in the AACN Synergy Model for Patient Care, the nurses' competencies is driven by the patients' needs (Kaplow & Hardin 2007:4). From these patient needs the researcher and the key drivers had to reach consensus on which competencies had to be assessed to determine the synergy that existed in the selected CCU at the time this study was conducted.

### 5.2.2 Reflections on patient needs

The researcher reflected on the patients' and families' needs in the **LOOK** and **THINK** stages of **Cycle 1: Step 1, Step 2 and Step 3** which are summarised in Table 5.2. The reflections revealed the physiological and physical needs of the patients as well as the patients' and their families' psychological needs. For the purpose of this study the orange highlighted patient needs were the needs used to determine the nurses' competencies.

**TABLE 5.2: SUMMARY OF PATIENTS' NEEDS IN THE SELECTED CCU**

DEMOGRAPHIC DATA (MAJORITY OF PATIENTS)	PHYSIOLOGICAL NEEDS	PHYSIOLOGICAL NEEDS (Continued)	PSYCHOLOGICAL NEEDS
<p><b>Age</b></p> <ul style="list-style-type: none"> <li>61 – 70 years</li> </ul> <p><b>Gender</b></p> <ul style="list-style-type: none"> <li>Female</li> </ul> <p><b>Weight</b></p> <ul style="list-style-type: none"> <li>60 – 79 kg</li> </ul> <p><b>Risk profile</b></p> <ul style="list-style-type: none"> <li>Delirium risk</li> <li>Cardiac risk</li> <li>Respiratory risk</li> <li>DVT risk</li> <li>Pressure sore risk</li> </ul> <p><b>Length of stay</b></p> <ul style="list-style-type: none"> <li>1 – 5 days</li> </ul> <p><b>Medical disorders</b></p> <ul style="list-style-type: none"> <li>52 patients</li> </ul> <p><b>Surgical interventions</b></p> <ul style="list-style-type: none"> <li>72 patients</li> </ul> <p><b>Key:</b> kg = kilogram DVT = Deep vein thrombosis</p>	<p><b>Neurological system needs</b></p> <ul style="list-style-type: none"> <li>GCS had to be done</li> <li>Patient received sedation</li> <li>Patients received neuromuscular blocking agents</li> </ul> <p><b>Cardiovascular system needs</b></p> <ul style="list-style-type: none"> <li>Monitoring heart rate, heart rhythm, non-invasive blood pressure, saturation, temperature</li> <li>Increased and decreased cardiac output</li> <li>Pharmacological support</li> <li>Epinephrine</li> <li>Phenylephrine</li> <li>Vasodilator</li> <li>CVP, intra-arterial monitoring</li> <li>Invasive cardiac monitoring</li> </ul> <p><b>Respiratory system needs</b></p> <ul style="list-style-type: none"> <li>ABG analysis</li> <li>Non-invasive and invasive ventilation</li> <li>Pressure cycle mode</li> </ul> <p><b>Gastrointestinal system needs</b></p> <ul style="list-style-type: none"> <li>Nasogastric tube</li> <li>Nasogastric tube on free drainage</li> </ul> <p><b>Nutritional needs</b></p> <ul style="list-style-type: none"> <li>Enteral</li> <li>Parenteral nutrition</li> </ul> <p><b>Renal system needs</b></p> <ul style="list-style-type: none"> <li>Intake and output</li> <li>Renal replacement therapy</li> </ul> <p><b>Key:</b> CVP = Central venous pressure</p>	<p><b>Endocrine system needs</b></p> <ul style="list-style-type: none"> <li>Management hypo - and hyperglycaemia</li> <li>Pharmacological support: short acting insulin</li> </ul> <p><b>Integumentary system</b></p> <ul style="list-style-type: none"> <li>40% burns care</li> <li>Wounds care</li> <li>Pressure care</li> </ul> <p><b>PHYSICAL NEEDS</b></p> <ul style="list-style-type: none"> <li>Prevention of VAP</li> <li>Prevention of CLABSI</li> <li>Prevention of CAUTI</li> <li>Prevention of SSI</li> </ul> <p><b>Pain management</b></p> <ul style="list-style-type: none"> <li>Intramuscular</li> <li>Intravenous</li> </ul> <p><b>Diagnostic test analysis</b></p> <ul style="list-style-type: none"> <li>Chest radiograph</li> <li>Albumin</li> <li>Electrolytes</li> <li>Procalcitonin</li> <li>C-reactive protein</li> <li>Full blood count</li> <li>Urea and creatinine</li> </ul> <p><b>Key:</b> VAP = Ventilator associated pneumonia CLABSI = Central line associated bloodstream infection CAUTI = Catheter associated urinary tract infection SSI = Surgical site infection</p>	<p><b>Patients:</b> <u>Resiliency</u></p> <ul style="list-style-type: none"> <li>Need support in adaptability</li> </ul> <p><u>Vulnerability</u></p> <ul style="list-style-type: none"> <li>Need to be informed</li> <li>Need to attend to language barrier</li> <li>Need personalised care</li> </ul> <p><u>Participation in care</u></p> <ul style="list-style-type: none"> <li>Need communication with nurses who are interpersonally skilled</li> <li>Need to be respected and to be considered</li> </ul> <p><b>Families:</b> <u>Vulnerability:</u></p> <ul style="list-style-type: none"> <li>Remaining near the patient</li> <li>Need for information</li> <li>Need for reassurance</li> </ul>

### 5.2.3 Assess nurses' competencies

At the time when the nurses' competencies were assessed (19 September 2011 to 12 October 2011) the position of the unit manager at the selected CCU in Gauteng had been vacant since March 2011. The human resources department was in the process of recruiting a suitable person. In the absence of the unit manager the decreasing nurses' morale and the lack of self-motivation was evident in the following comments:

- *"...don't ask me how I am, ask me on Monday..."*
- *"... ons kan nie so werk nie, nie ek nie en ook nie die ander nie..." (...we can't work like this, not me or the others...")*
- *"...I don't have energy! I am going to send my curriculum vitae out..."*
- *"...I want to transfer to another unit... I can't work in an environment like this..."*

According to the human resources department of the selected hospital, the labour turnover in the selected CCU at the time was 16% and the absenteeism 2%. The human resource department regarded these percentages as still acceptable, but it in fact represented the highest limits allowed. In spite of these circumstances three of the nurses took the responsibility on their shoulders to manage the CCU under the supervision of the deputy nursing service manager. These three nurses agreed to be the key drivers in this action research project. In the timeframe 19 September 2011 to 12 October 2011, with the initiation of the journey towards enhancing synergy in the CCU, 18 nurses were allocated to the selected CCU. Sixteen of the nurses were registered as professional nurses at the SANC and two were registered as enrolled nurses.

The two enrolled nurses were not assessed for the purpose of the study as they had only started to work in the selected CCU at the beginning of October 2011. The enrolled nurses were still in the process of being orientated to the CCU environment and the shift leaders agreed that assessment of their competencies would be unfair to them at that stage.

The nurses working in the selected CCU were not assessed according to the eight competencies as described by the AACN Synergy Model for Patient Care (Kaplow & Hardin 2007:6). The key drivers and the researcher perceived the eight competencies of the AACN Synergy Model for Patient Care as a concept to aspire to in the future. For the purpose of this study the researcher focused on the clinical judgement competency.

The researcher followed the advice of Good (2009:4) who states: “Continuity of care and **strong clinical judgement** [“I emphasise”] help to stabilise care within our chaotic critical care environment, which should lead to higher clinical effectiveness and better patient outcomes.” The assessment was conducted on an unplanned date and time. The shift leaders and the researcher agreed that this might help “to prevent stage performance” from the nurses during the assessment of their competencies. The researcher orientated the nurses about the assessment procedure. During the brief orientation the researcher confirmed with them that the pass rate was a minimum of 85%. Critical points were included and indicated with an “**F**” (fail). If the nurse missed a critical point, she or he would be assessed as “Not competent yet”. The remaining criteria were allocated one mark each if the nurse was compliant with the set criteria whereas no mark was allocated if the nurse was non-compliant with the set criteria (see Annexure C.4).

The shift leaders and researcher further consented that the researcher should assess all the nurses. The nurses reflected that they did not feel confident to engage in peer assessment and consensus was reached by all concerned (researcher, shift leader and nurses) that a single assessor would enhance the validity of the research findings.

The competency level of the nurses in the selected CCU was not on a continuum range of “Novice” to “Expert”. The nurses were categorised according to their clinical experience. Their clinical experience was linked to their qualifications. The researcher used Benner’s continuum from “Novice” to “Expert” to categorise the nurses (Benner et al 1996:35).

- **Competency levels**

Benner’s model of skills acquisition shows that a person usually passes through at least five stages to develop from a novice to an expert. These five stages as delineated by Benner et al (1996:35) are discussed next.

- **Novice**

The novice is regarded by Benner et al (1996:37) as a nurse who has to perform in situations she or he has never been exposed to. Novices’ behaviour, their ability to predict and their intuition are limited to their experience in similar situations. Novices

focus on tasks that have to be done and they have a “to-do-list” and are directed by rules. For the purpose of this study a nurse was regarded as being a novice nurse if she or he had not been exposed to the critical care environment before and was in her or his first year of gaining experience in the critical care field. Two of the nurses were enrolled nurses and had only started working in the selected CCU in October 2011. They were regarded as novices and were not included in the assessment of the nurses’ competencies.

- **Advanced beginner**

Advanced beginners have knowledge, skills, the “know-how” and they have enough experience to note recurring, meaningful components of a situation. Advance beginners still need help to prioritise their tasks and also positive feedback to build their confidence. The advance beginners are dependent on the expertise of the multidisciplinary team (Benner et al 1996:49; Saver & Habel 2012). For the purpose of this study two of the nurses had worked in the selected CCU for one year and were regarded as advanced beginners.

- **Competent**

Competent nurses typically had worked in the critical care environment for approximately two years. The difference between an advanced beginner and a competent nurse is the ability of the competent nurse to predict the likely course of events (Saver & Habel 2012). Competent nurses demonstrate a better clinical understanding and are more accurate and quick in their technical skills and organisational abilities. However, the competent nurse lacks the speed and flexibility of the proficient nurse (Benner et al 1996:49). The competent nurse celebrates correct decision making, but falls into distress when wrong decision making becomes evident (Saver & Habel 2012). In this study eight nurses who had experience ranging from two to seven years individually were regarded as competent nurses. Three of the competent nurses took charge of shifts when on duty. Additionally, three of the nurses had enrolled for their diploma in critical care nursing at a university in Gauteng.

- **Proficient**

Proficient nurses are more involved with the patient and their families and view the current situation in terms of the past situation. Proficient nurses assess patients as a “whole rather than parts”. Two of the nurses in this study were regarded as proficient nurses and had between five and twelve years’ experience. Both of them had obtained an in-service training certificate in critical care nursing.

- **Expert**

Expert nurses have a solid technical foundation, a deep knowledge base and experience with sound critical analytical thinking skills. Expert nurses adapt to individual patients and see the current situation in terms of the background; they further have the ability to predict the patient’s journey (Saver & Habel 2012). In this study each of the four expert nurses had a diploma in critical care nursing and had between four and 18 years’ individual experience among them.

The continuum from “Novice” to “Expert” as applied by the AACN Synergy Model for Patient Care is discussed in Chapter 2, Section 2.3.2. In Table 5.4 the nurses’ qualifications and experience in a selected CCU are set out. In the first column the nurse’s ‘research number’ is indicated. This was the number allocated to each individual nurse to guarantee his her anonymity (Burns & Grove 2009:189). In the second column his or her years of clinical experience is shown while in column three the hours the nurses worked in the selected CCU are presented. In the fourth column their qualification(s) in critical care is indicated and their competency and skills acquisition level related to Benner’s categorisation as determined by the researcher are shown in column five. Column six indicates whether or not they were shift leaders.

In Table 5.3 the **three key drivers** are highlighted in orange. There was no formal in-service programme in place to assess or support the nurses and promote or motivate them to progress to a higher level of competency. The only alternative for the nurses were to follow formal training programmes at the hospital group’s education department in order to obtain a certificate or a diploma in critical care nursing.

**TABLE 5.3: NURSES' QUALIFICATIONS AND EXPERIENCE IN THE SELECTED CCU**

RESEARCH NUMBER	CLINICAL EXPERIENCE	HOURS PER WEEK	CRITICAL CARE QUALIFICATION	COMPETENCY LEVEL	SHIFT LEADER
N 1	5 years	42		Competent	No
N 2	5 years	42		Competent	No
N 3	6 years	42		Competent	Yes
N 4	12 years	25	Elementary Critical Care certificate	Proficient	Yes
N 5	2 years	42	First year Critical Care diploma	Competent	No
N 6	15 years	36	ICU trained in 1997	Expert	Yes
N 7	1 years	42	Student: Elementary Critical Care certificate	Advanced beginner	No
N 8	6 years	42		Competent	Yes
N 9	18 years	25	ICU trained 1994	Expert	Yes
N 10	16 years	42	ICU trained 1996	Expert	Yes
N 11	4 years	42	ICU trained 2010	Expert	Yes
N 12	5 years	42	Elementary Critical Care certificate	Proficient	No
N 13	4 years	42	Second year diploma: Critical Care	Competent	Yes
N 14	5 years	42		Competent	No
N 15	1 year	42		Advanced beginner	No
N 16	7 years	42	First year Critical Care diploma	Competent	No

To answer the needs of critically ill patients, nurses have to acquire problem solving skills, sound underpinning knowledge and accuracy and competency in clinical skills (National cancer nursing education project 2009). When considering the **LOOK** in Cycle 2 (Chapter 4, Section 4.4.2) that related to the **THINK** of Cycle 1 (Chapter 4, Section 4.5), it was obvious that the psychological needs of the patients and their families in the selected CCU were not met at the time the study was conducted. The nurses' competencies relating to the psychological needs of patients and their families were therefore not re-assessed during PHASE 1, Cycle 2 in the study.

For the purpose of this study the researcher and the key drivers had to reach consensus on what competencies related to the physiological and physical needs of the patients would be assessed. It was agreed that cardiac monitoring, nursing a patient on a mechanical ventilator with a pressure cycle mode, the interpretation of an arterial blood gas, and a chest radiograph (with regard to shift leaders only), and the prevention of VAP, CLABSI and CAUTI would be assessed.

### **5.2.3.1 Cardiac monitoring**

Cardiac monitoring is discussed in Chapter 4, Section 4.4.1.2. The rationale for cardiac monitoring was that all the patients (N=124 [100%]) in the selected CCU needed cardiac monitoring.

Tibby and Murdoch (2003:46) emphasise that accurate cardiac monitoring is vital as the heart is one of the most common organs to fail in the critically ill patient. These authors also underline the fact that the maintenance of adequate organ perfusion is crucial if critically ill patients are to survive. Alhashemi, Cecconi and Hofer (2011:214) regard optimisation of haemodynamic monitoring (which includes cardiac monitoring) as a “cornerstone” in managing critically ill patients. According to Sharman (2007:306), cardiac monitoring is needed in critically ill patients to determine changes in the patients’ cardiac function, assess patients’ response to treatment and to detect or prevent potentially fatal incidents.

### **5.2.3.2 Nursing a patient on mechanical ventilation**

Mechanical ventilation is discussed in Chapter 4, Section 4.4.1.2. The nursing of a patient on a mechanical ventilator was regarded by the researcher and the key drivers as an essential competency for nurses working in a CCU.

Seventy-nine (n=79 [64%]) of the patients needed mechanical ventilation. Sixty-two (n=62 [50%]) of the patients in the selected CCU were invasively mechanically ventilated while 17 (n=17 [14%]) were non-invasively mechanically ventilated. Couchmana, Wetzig, Coyer and Wheeler (2007:4) acknowledge that critical care nurses’ clinical practice is the fundamental component of care where the mechanically ventilated patients are concerned. It is these authors’ stance that nurses need to deliver high quality care to the ventilated critically ill patient using appropriate technology that will ensure optimal outcomes for the patient. Grossbach, Chlan and Tracey (2011:30) regard knowledge and understanding of basic ventilator support as an essential for nurses working in a CCU. They state usually CCU nurses are “first-line managers” challenged with patient-ventilator related problems. To provide optimal patient-centred care, early recognition and managing of patient-ventilator related problems is pivotal to

resolve acute respiratory distress, dyspnoea, increased work of breathing, and to prevent adverse events.

### **5.2.3.3 Arterial blood gas analysis**

Arterial blood gas analysis is discussed in Chapter 4, Section 4.4.1.2. Arterial blood gasses were done on 98.4% (n=122) of the patients admitted to the selected CCU. Allen (2005:42) and Coggan (2008:28) concur that the nurses' ability to interpret arterial blood gasses is vital because it will ensure that critically ill patients' care are "timely and appropriate". Woodrow (2010:157) states an arterial blood gas reading is an invaluable tool when determining a patient's ventilation, oxygenation and acid-base balance. Hence, nurses must acquire the knowledge to interpret blood gasses as it will improve their critical decision making and ventilator management.

### **5.2.3.4 Chest radiograph interpretation**

According to Connolly (2001:259), for the advanced practice nurses a chest radiograph is an important tool with which to make a differential diagnosis. If the advanced practice nurses uses his or her ability to recognise abnormalities on the chest radiograph and links it to the patient's history and clinical picture, it enables him or her to make an appropriate diagnosis and to manage the patient accordingly. The chest radiograph is discussed in Chapter 4, Section 4.4.1.3. In this study a chest radiograph was taken from 100% (N=124) of the critically ill patients. The key drivers shared Connolly's view that the chest radiograph is a skill utilised by advanced practice nurses and consensus was reached that this competency would be assessed at shift leader level only. There were nine shift leaders in the selected CCU.

### **5.2.3.5 Prevention of VAP, CLABSI and CAUTI**

A significant improvement in the care processes in CCUs showed enhanced clinical and financial outcomes for patients; this effected a change in clinical practice in that the focal point became prevention and evidence informed practice to ensure optimal patient outcomes (Lawrence et al 2009:158). According to the BCA campaign (BCA 2011a), in the CCU VAP normally caused an increase of 30% in mortality but by implementing only one of the elements of the VAP bundle – tilting the head of the bed - it resulted in a

70% decrease in VAP. Also, CLABSI normally increased patient morbidity with up to 15%. However, with the implementation of the BCA bundle related to CLABSI near elimination of CLABSI was reported. Similarly, the implementation of the CAUTI bundle reduced morbidity rates with between 48% and 81% in the CCU. These statistics supported the choice of the researcher and the key drivers to assess the knowledge of the nurses related to the prevention of VAP, CLABSI and CAUTI.

### **5.3 Cycle 2: STEP 4: THINK ABOUT NURSES' COMPETENCIES**

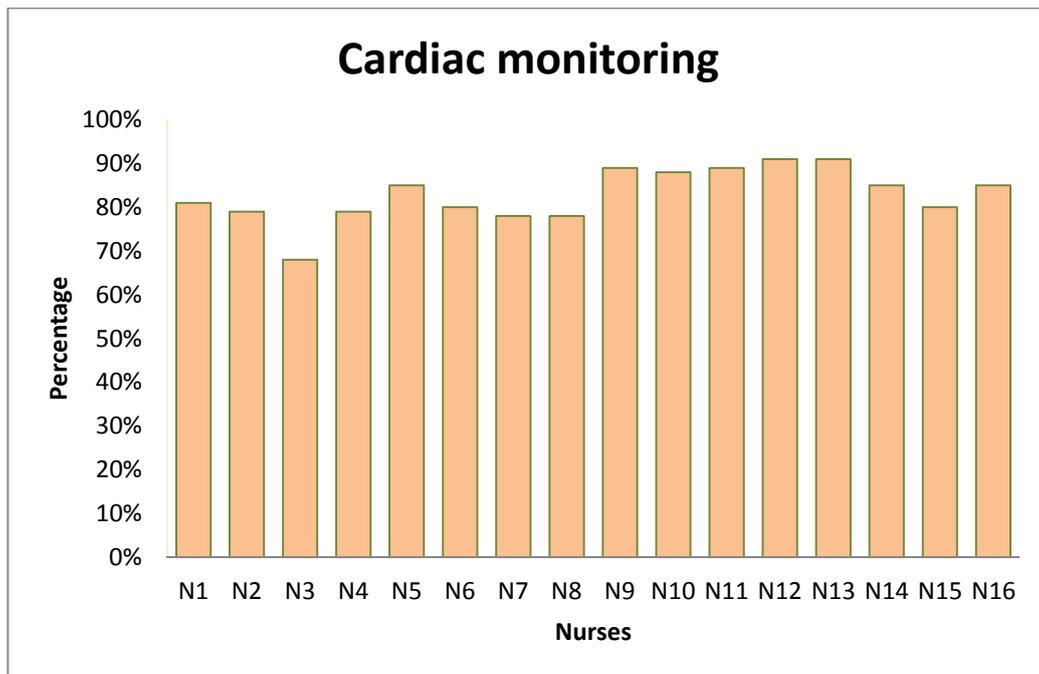
The **THINK** in **Cycle 2, Step 4** was done with the help of a statistician. The data analysis of the nurses' competency data was carried out by using SAS software for Windows (SAS Institute:2002-2010). According to the statistician, the 95% confidence level was used throughout the analysis.

#### **5.3.1 Nurses' competencies**

The research findings were analysed during Step 4 and they are discussed in terms of the assessment of the nurses' competencies as discussed in Section 5.2.3.

##### **5.3.1.1 Cardiac monitoring**

Sixteen (N=16) of the nurses were assessed on their competencies related to cardiac monitoring. Half of them (n=8 [50%]) obtained a score lower than 85% and were assessed as "Not competent yet" while the other half (n=8 [50%]) scored 85% or higher. The highest score was 90% and the lowest was 68% with the average percentage for the assessment 83%. In fact, none of the nurses were found competent yet as all of them had failed one or more critical points regarding the unsafe alarm limit settings. Graph 5.1 shows the results obtained by the nurses assessed according to the cardiac monitoring instrument.



**Graph 5.1: Cardiac monitoring results of nurses' in the selected CCU (N=16)**

The researcher used a cardiac monitoring instrument to assess the nurses' competencies related to ECG monitoring, non-invasive blood pressure monitoring, intra-arterial monitoring, central venous monitoring, monitoring of saturation and temperature and the skill to level and to zero the invasive pressure monitoring transducers. (see Annexure C.4). Being competent in the assessment of cardiac monitoring enables nurses to formulate an accurate nursing diagnosis and appropriate interventions related to the cardiac output needs of patients in a selected CCU. Cardiac output, central venous pressure and intra-arterial monitoring are discussed in Chapter 4, Section 4.4.1.2.

In this study 16 (100%) of the nurses obtained an 85% or higher score, but because of unsafe alarm settings they were declared as not being competent yet. Alarms settings had to be related to the selected CCU's alarm settings protocol to ensure a safe environment for the patients. Alarm settings are indicated on the cardiac monitoring instrument (see Annexure C.4) as a critical point. Graham and Cvach (2010:28) found in a study conducted in a 950-bed academic medical hospital in Maryland, USA, that nurses were concerned about the excessive number of cardiac monitor alarms in a CCU. The nurses' concern was the possibility that nurses in the CCU would become "desensitised" to the alarms going off and this would compromise patient safety.

Alarm settings are a critical point as Korniewicz, Clark and David (2008:37) point out. The authors stress that alarms are vital tools to improve patient safety because as clinical devices they alert nurses to a change in a patients' condition. Garg, Bhalotra, Goel, Pruthi, Bhadoria and Anand (2010:522) state proper alarm settings are critically important and a lifesaving feature for critically ill patients. Alarms must be well managed to prevent nuisance alarms that compromise patients' safety by sending out frequent false positive alarms.

Graham and Cvach (2010:28) note it has become standard practice to rely on alarms to continuously "watch" patients in a CCU and to alert nurses if there is a deviation from the "normal" patient status. They further express their concern that "alarm fatigue" might occur when too many false alarms go off and nurses compromise patient safety by ignoring, disabling or silencing them. These authors advocate for their patients and appeal to nurses who work with monitors to be knowledgeable on how to operate physiological monitor systems and how to appropriately set alarms to meet the individual patient's needs.

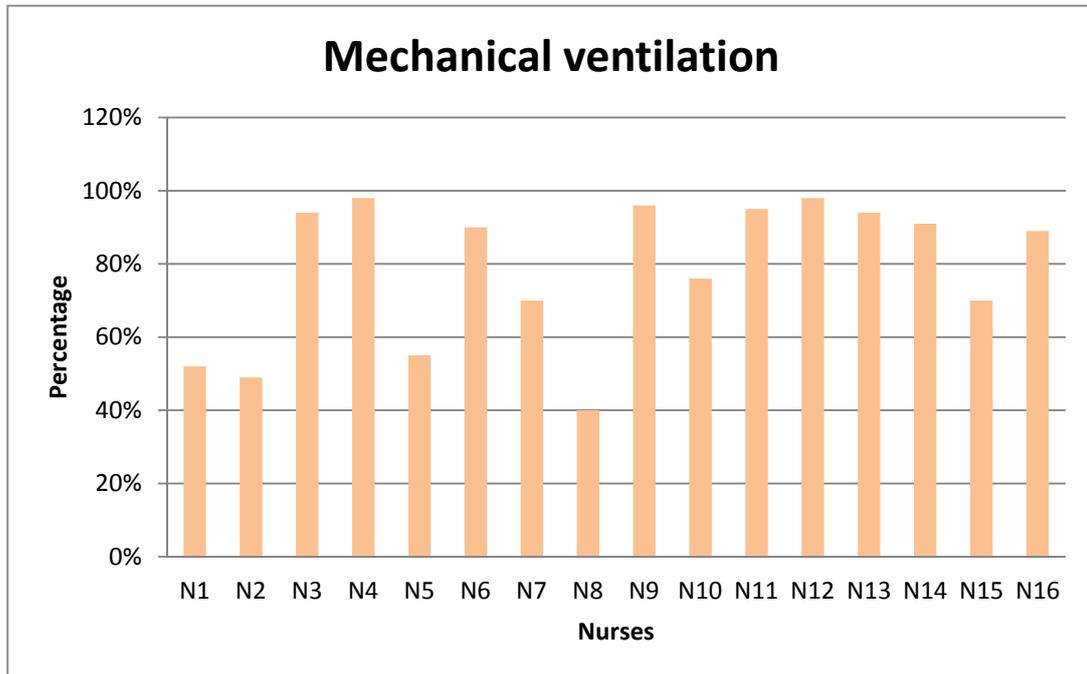
False alarms or "nuisance alarms" are described by Tsien and Fackler (1997:614) as annoying alarms that continuously rings without an adverse condition. A "nuisance alarm" might result in a delayed reaction from nurses. CCU nurses stated that their primary problem with alarms were that they were continuously going off; they added that the pulse oximetry alarm is the alarm giving the most false alarms (Sobieraj, Ortega, West, Voepel, Battle & Robinson 2006:306).

In the selected CCU nurses had alarm setting guidelines. They had to check alarms with every change of a shift or when it alerted them to a change in a patient's condition. The alarm that frequently and continuously went off in the selected CCU and gave the most false alarms, was the breathing rate alarm.

### **5.3.1.2 Nursing a patient on a mechanical ventilator**

Sixteen (N=16) nurses were assessed on nursing a patient on a mechanical ventilator. Nine (n=9 [56%]) of them obtained a score higher than 85% with the highest score being 98%. Due to not being aware of critical points related to safe alarm settings, none of the nurses were declared competent in mechanical ventilation. Seven (n=7 [44%])

did not score above 85%, with the lowest score being 40%. Graph 5.2 displays the results of the nurses caring for patients on mechanical ventilators.



**Graph 5.2: Results of assessment on mechanical ventilation (N=16)**

The instrument used to assess the nurses' competency to care for an adult patient on a mechanical ventilator included the following (see Annexure C.4):

- o calculation of the patients' ventilation needs considering the patients' weight and blood gas findings
- o identification and defining of the mode of ventilation, rate, inspiratory pressure, tidal volume, minute volume, positive end expiratory pressure, peak pressure limit, sensitivity, apnoea alarm and pressure support
- o explaining the normal values of the ventilator settings
- o assessing the patients' response to ventilation
- o assessing patency of the patients' airway
- o presence of safety equipment such as resuscitator bag, positive end expiratory pressure mask and suctioning equipment.

The pressure cycle mode of ventilation was assessed as all the patients in the selected CCU were ventilated with this mode. The mechanical ventilation of patients is discussed in Chapter 4, Section 4.4.1.2.

Mechanically ventilated critically ill patients need careful, precise and constant nursing care to optimise patient outcomes and to prevent complications such as ventilator induced lung injury and its more severe form, acute respiratory distress syndrome, that can add to increased mortality and morbidity in the months and years after they have been discharged from hospital (Cuthbertson, Roughton, Jenkinson, Maclennan & Vale 2010:R6; Desai, Law & Needham 2011:371; Herridge, Cheung, Tansey, Matte-Martyn, Diaz-Granados, Al Saidi, Cooper, Guest, Mazer, Mehta, Stewart, Barr, Cook, Slutsky & Canadian Critical Care Trials Group 2003:683).

Baumgartner (2009:459) writes it is evident that interventions such as lung protective ventilation decrease the mortality and morbidity of mechanically ventilated critically ill patients. With lung protective ventilation limited volumes and limited pressures are used to mechanically ventilate patients. Needham, Colantuoni, Mendez-Tellez, Dinglas, Sevransky, Dennison Himmelfarb, Desai, Shanholtz, Brower and Pronovost (2012:e2124) explain lung protective ventilation as ventilating patients with tidal volumes not more than 6 ml/kg predicted body weight and with plateau pressures equal or less than 30 cmHO<sub>2</sub>. Predicted body weight is calculated on the basis of the patients' gender and height. Pre-calculated predicted body weight tables are available on the acute respiratory syndrome network's website

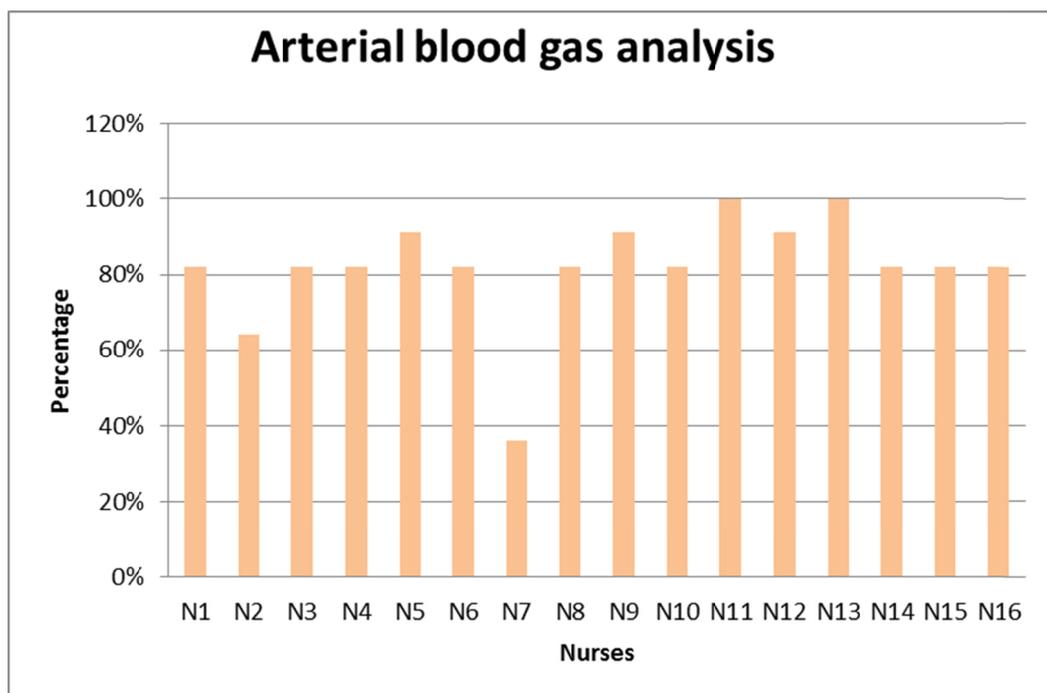
([http://www.ardsnet.org/system/files/pbwtables\\_2005-02-02\\_0.pdf](http://www.ardsnet.org/system/files/pbwtables_2005-02-02_0.pdf)). The patients' heights are indicated in feet and inches. These tables have been adapted because in South Africa the metric system with metres and centimetres is used.

In addition to the care of patients on a mechanical ventilator, Burns (2009:14) highlights that it is essential for nurses caring for patients on mechanical ventilators to have the skills and knowledge to move them from an acute phase through to the phase of weaning them from ventilators. In a study conducted by Botha (2009b) at the University of the Witwatersrand in South Africa, it was found that nurses lacked competencies in caring for mechanically ventilated patients. Botha's convenience sampling included 136 nurses with varying training backgrounds. Despite the fact that she found none of the nurses competent in caring for patients on mechanical ventilators, she discovered a disturbing phenomenon in that the nurses who were taking charge of CCUs and did ventilator settings felt they were indeed competent to take care of patients on mechanical ventilators.

In the selected CCU specialised and non-specialised nurses rendered care to patients on mechanical ventilators. It was found that 44% (n=7) was not competent yet, scoring below 85%. Fifty-six per cent (n=9) obtained a score higher than 85% but was also found not competent yet due to failing critical points related to unsafe alarm limits. (refer to Section 5.3.1.1 for the discussion on alarm settings). The findings in this study are thus consistent with those of Botha (2009b) that nurses were not competent yet to take care of mechanically ventilated patients.

### 5.3.1.3 Arterial blood gas analysis

Sixteen (N=16) of the nurses were assessed to determine their blood gas analysis skills. Five (n=5 [31%]) obtained 85% or higher and 11 (n=11 [69%]) of the nurses' scores were less than 85%. The average score the nurses obtained was 81% with the highest one being 100% and the lowest 60%. Graph 5.3 shows the results of the nurses related to the analysis of an arterial blood gas.



**Graph 5.3: Results of nurses' on blood gas analysis (N=16)**

Coggan (2008:24) and Kaufman (2012) regard arterial blood gas analysis as a vital skill for physicians, nurses, respiratory therapists and other healthcare providers to ensure that critically ill patients receive timely and appropriate care. Lian (2010:26) supports these authors' view and describes blood gas analysis as an invaluable tool for the critical care nurse to help assess and monitor the critical ill patients. Lian (2010:26)

further emphasises the fact that the critical care nurse is the first to receive the results of the arterial blood gas and he or she has to monitor changes and act appropriately.

A basic knowledge assessment was done and the assessment tool was used for critical care certificate students in the selected hospital (see Annexure C.4). The nurses' knowledge with regard to the normal ranges of arterial blood gas values and the interpretation of these values were assessed. This knowledge is crucial to formulate a proper nursing diagnosis related to the patient's oxygenation, ventilation, and metabolic status (Urden et al 2010:591). To determine the patients' oxygenation status the nurses had to use the patient's PaO<sub>2</sub>, saturation, haemoglobin, the ratio between the PaO<sub>2</sub> and the fraction of inspired oxygen (P/F ratio), the widening of the partial pressure of the alveolar and arterial oxygen gradient (A-a<sub>d</sub>PO<sub>2</sub>) and shunt values. To determine the patients' ventilation status the nurses had to use the PaCO<sub>2</sub> and pH values on the blood gas. The metabolic status was determined by assessing the pH, actual bicarbonate and the base excess or deficit (extracellular fluid) (Baumgartner 2009:447; Kaplow & Hardin 2007:286).

With the assessment of the advanced beginners, it was expected that they would know when to notify the shift leaders and, being assessed from competent to expert level, they had to state whether any interventions were needed. Blood gas analysis is discussed in Chapter 4, Section 4.4.1.2. It was expected of nurses to be competent in the analysis of blood gasses in the selected CCU as 98% of the patients had a blood gas investigation done.

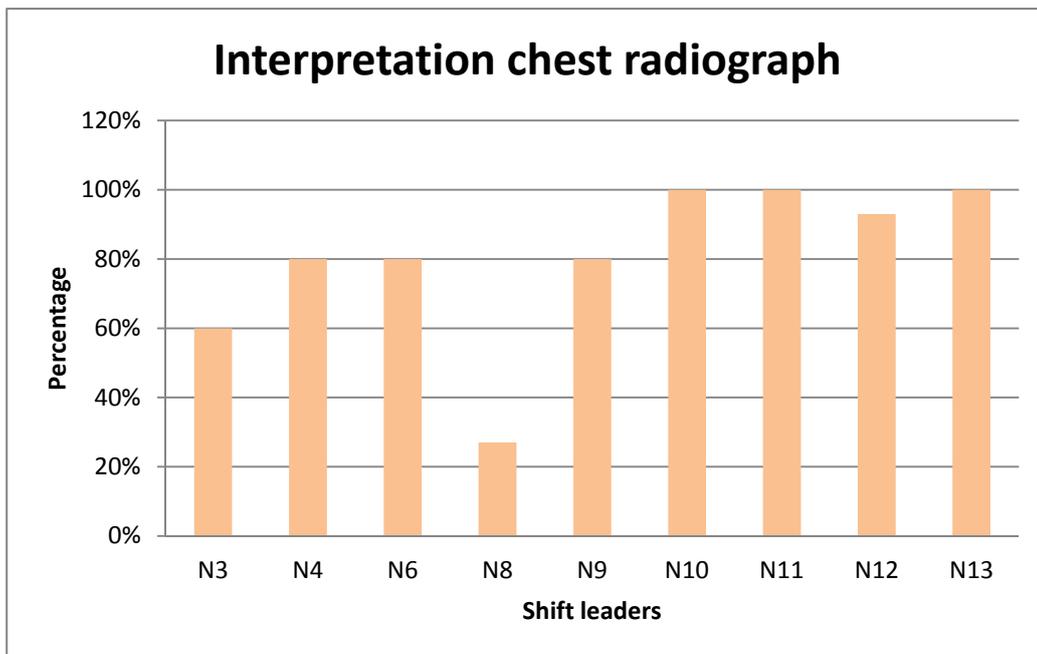
Only five (n=5 [31%]) nurses were found competent in the analysis of blood gasses. The remaining 11 (n=11 [69%]) were assessed as not competent because they could not differentiate between base excess (blood) and base excess (extracellular fluid). Base excess is the amount of bicarbonate needed to adjust the pH to 7.4 when a sample is tested at a PaCO<sub>2</sub> of 40 mmHg and a temperature of 37°Celsius. The base excess in blood refers to the base excess in the blood volume of the extracellular fluid and the base excess in the extracellular fluid represents the base excess in the whole volume of extracellular fluid. The base excess value related to the extracellular fluid is the best way of expression of the base excess in vivo as each component of the extracellular fluid has its own distinct buffering capacity (Kaplow & Hardin 2007:287; Peake & White 2002:615).

The nurses were also unable to differentiate between the actual bicarbonate and the standard bicarbonate (see Annexure C.4). Plasma bicarbonate concentration ( $\text{HCO}_3$ ) is the amount of bicarbonate in unit of volume of plasma, measured in millimol per liter (mmol/l). Ninety-five per cent of carbon dioxide is transported in the form of bicarbonate. The normal arterial blood value of bicarbonate ranges from 22-28 mmol/l. Laboratories in the selected hospital differentiate between actual bicarbonate and standard bicarbonate. In an arterial blood gas the calculation of bicarbonate depends on the value of the pH and  $\text{PaCO}_2$ . The actual bicarbonate is calculated from the patient's measured  $\text{PaCO}_2$  and the standard bicarbonate is calculated from normalising the  $\text{PaCO}_2$  to 40 mmHg. Therefore, the standard bicarbonate measures only the metabolic component but is helpful to determine the cause of the acid-base disturbance. In healthy patients the  $\text{PaCO}_2$  is normal and there is a minimal or no difference between the actual and the standard bicarbonate (Higgins 2008:960; Kaplow & Hardin 2007:286). The nurses in the selected CCU charted the base excess and bicarbonate values daily, yet they did not know which value was the correct value to chart or why it was the correct one. In the feedback they reflected that they were not scientifically knowledgeable in using the correct values and did not question daily practices.

In a study conducted by Schneiderman, Corbridge and Zerwic (2009:154) in two community hospitals in northern Illinois, USA, 58 staff nurses' ability to analyse arterial blood gasses significantly increased before and after engaging in a computer-based learning programme related to blood gas analysis. These authors found that online learning can be an alternative in providing continuous education to nurses. In the context of this study online learning was not a possible alternative as the nurses' access to the internet, especially after hours, was limited.

#### **5.3.1.4 Interpretation of chest radiography**

Of the nine (N=9) of the shift leaders assessed for their skills related to chest radiography, four (n=4 [44%]) obtained scores above 85% and five (n=5 [66%]) obtained a score lower than 85%. The average score of the shift leaders was 74%. The highest score was 100% and the lowest 27%. Graph 5.4 shows the results of the scores of the shift leaders in the assessment of chest radiography.



**Graph 5.4: Results of shift leaders chest radiography interpretations (N=9)**

Siela (2008:444) states chest radiography is still used to quickly scan for chest abnormalities and is viewed as an important tool to manage a critical ill patient. Critical care nurses are also the first to read the radiologist report and interpret it to the physician. If nurses master the basic skills to interpret radiographs they will be able to recognise and localise gross pathological changes, for example, a pneumothorax which is visible on a chest radiograph. Chest radiography interpretation is related to the identification of the quality of the chest radiograph, the lung fields, invasive lines, mediastinum, the heart, and the bony structures (see Annexure C.4). Chest radiography is discussed in Chapter 4, Section 4.4.1.3.

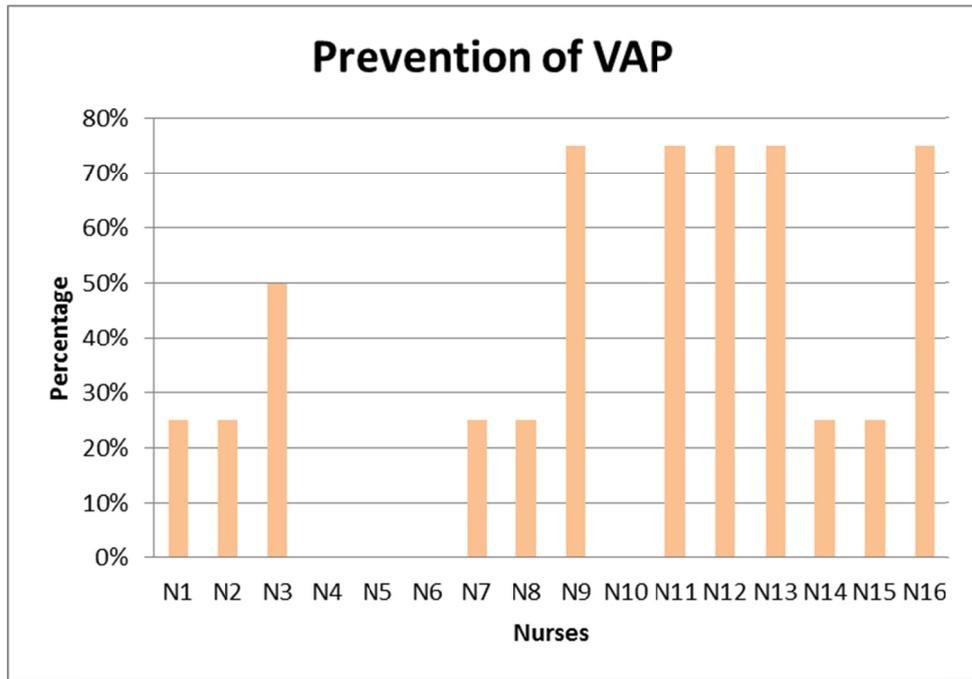
All of the patients (100%) in the selected CCU had chest radiography done. It is therefore undoubtedly important that nurses in the CCU must be able to recognise abnormalities and intervene appropriately or notify doctors about their findings. This statement is supported by Urden et al (2010:597). It was of concern to the researcher that the nurses were competent in identifying abnormalities but not competent yet in, firstly, following a systematic method of interpretation and, secondly, to comment on the quality of the chest radiograph.

In a study conducted by Eisen, Berger, Hegde and Schneider (2006:460) at the Beth Israel Medical Center, Israel, and the University Hospital and the Manhattan Campus for The Albert Einstein College of Medicine, USA, the ability of medical students,

residents and fellows to interpret chest radiographs were assessed. The sample included 145 participants and although these authors found that interpretation improved with training, important diagnoses were missed. The findings of Gatt, Spectre, Paltiel, Hiller & Stalnikowicz (2003:214) support the findings of Eisen et al (2006:460). The former conducted a study in a university hospital in Jerusalem, Israel. The interpretation of radiographs by emergency department physicians was compared to the interpretation of radiographs by senior radiologists. Emergency department physician missed specific abnormalities and there were considerable discrepancies between their findings and the findings of the senior radiologists. These findings emphasise evaluation of routine radiographs by specialised radiologists and the need for training among emergency department physicians to improve their interpretation of radiograph skills. In fact, these findings were consistent with the findings in this study, thus obviously indicating that the nurses' skills as regards the interpretation of chest radiographs in the selected CCU had to be improved.

#### **5.3.1.5 *Prevention of ventilator associated pneumonia***

Sixteen (N=16) of the nurses were assessed on their knowledge concerning VAP. Surprisingly, none of the nurses obtained a score above 85%; all of their scores were below 85%. The highest score was 75%. The most disturbing discovery was that the average score was a mere 38% and the lowest 0%. Graph 5.5 displays the results obtained by the nurses regarding their knowledge about the prevention of VAP.



**Graph 5.5: Results of nurses' knowledge related to prevention of VAP (N=16)**

In the current study 62 (50%) of the patients were invasively ventilated and were at risk to develop VAP. It was profoundly worrying that it was only expected from the nurses to name the four basic components on how they can reduce VAP when looking after a patient on a mechanical ventilator; yet percentages of 38% and 0% were obtained. According to BCA (2011c) and Lawrence et al (2009:166), the four simple basic components of the prevention of VAP bundle (see Annexure C.4) are:

- o elevation of the head of the bed between 30 and 45 degrees
- o daily interruption of sedation
- o peptic ulcer disease prophylaxis
- o venous thrombus prophylaxis.

The prevention of VAP is discussed in Chapter 4, Section 4.4.1.3 and Chapter 5, Section 5.2.3. In this study the nurses' scores were below 85% and they were therefore found not knowledgeable on how to prevent VAP.

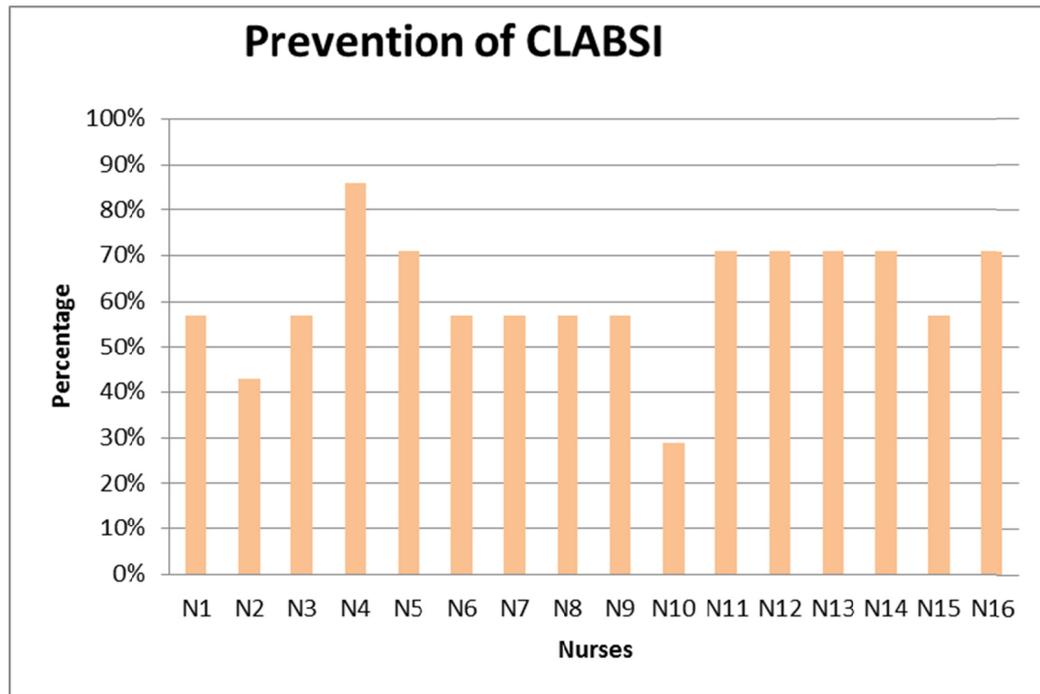
Arroliga, Pollard, Wilde, Pellizzani, Chebbo, Song, Ordner, Cormier and Meyer (2012:688) conducted a study in CCUs in Texas, USA, to monitor the reduction of ventilator associated pneumonia. They monitored and implemented the VAP bundle on

2 588 patients who were invasively ventilated and found that oral care done by respiratory therapists may be associated with the reduction of VAP. Morris, Hay, Swann, Everingham, McCulloch, McNulty, Brooks, Laurenson, Cook and Walsh (2011:2218) studied the impact of implementing the VAP bundle in a CCU in a teaching hospital in Edinburgh, Scotland. The CCU complied 95% with the elevation of the head of the bed between 30 and 45 degrees, oral care with a Chlorhexadine gel, and was 70% compliant with the sedation vacation element. It was found that, despite their inability to meet the target of 95% compliance with all the elements of the VAP bundle, a statistically significant reduction in the prevalence of VAP was observed. Gillespie (2009:51) did extensive research on the prevention of VAP and concluded that the evidence available presented a strong argument to consider a team approach in the implementation of the VAP bundle in the CCUs in South Africa to decrease the incidence of VAP.

The selected hospital in Gauteng supported the implementation of the VAP bundle. In a continuous professional development meeting held with the all the physiotherapists in the selected hospital, the physiotherapists indicated to the researcher that they had never before heard about the VAP bundle; moreover, the researcher perceived the lack of a team approach to prevent VAP among the physiotherapists. The knowledge of the nurses in the selected CCU related to VAP was a major concern to the researcher since it greatly jeopardised patient outcomes.

#### **5.3.1.6 Prevention of central line associated blood stream infection**

The knowledge of sixteen (N=16) of the nurses were assessed relating to the prevention of central line associated blood stream infection (CLABSI). Surprisingly, only one (n=1 [6%]) of the nurses scored higher than 85%. The average score was 61%; the highest score was 86% and the lowest 43%. Graph 5.6 shows the results nurses obtained related to their knowledge about CLABSI.



**Graph 5.6: Results of nurses' knowledge related to the prevention of CLABSI (N=16)**

The prevention of CLABSI is discussed in Chapter 4, Section 4.4.1.3. In this study 83% of the patients had a central line in situ and therefore it was extremely important that nurses had to update their knowledge about the prevention of CLABSI.

The assessment of the nurses' knowledge related to CLABSI included the following routines provided by the BCA (2011d) and Lawrence et al (2009:163) (see Annexure C.4):

- o hand hygiene
- o maximal barrier precautions
- o chlorhexadine skin antisepsis
- o optimal catheter site selection with the subclavian vein as the preferred site for non-tunnelled catheters in adults
- o daily review of line necessity with prompt removal of unnecessary lines
- o line secure and dressing clean and intact.

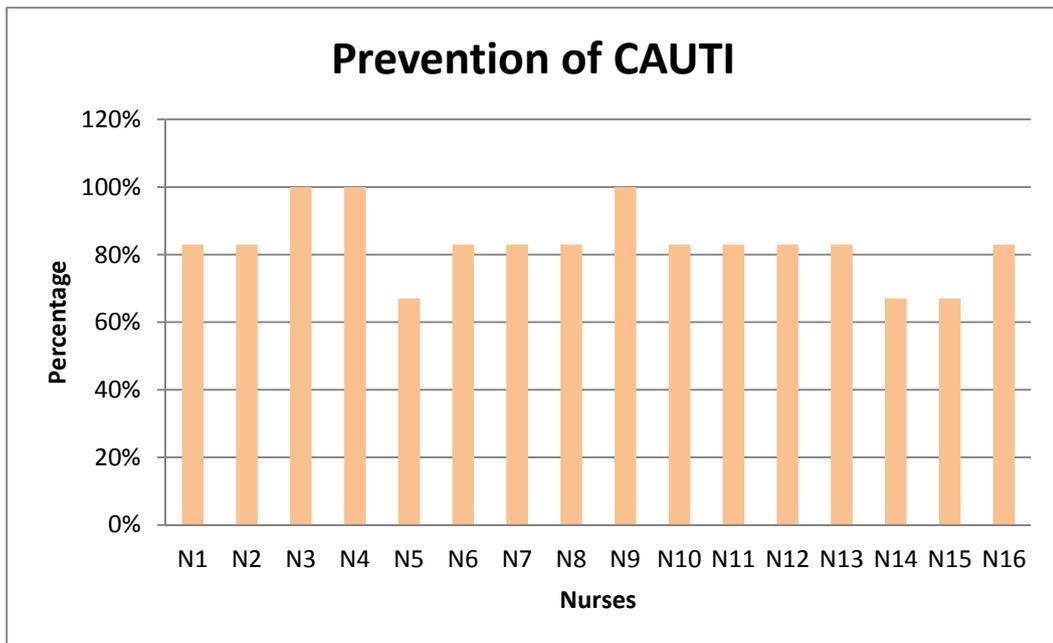
Again, only one (6%) of the nurses' scores was above 85% and 15 (n=15 [94%]) was found to be not competent yet in being sufficiently knowledgeable on how to prevent CLABSI.

The South African Minister of Health, Dr Aaron Motsoaledi, gave high priority to the prevention of healthcare associated infections and encouraged public hospitals to enrol in the BCA initiative and to implement the care bundles in their hospitals. Thirteen hospitals in Gauteng enrolled. One of the hospitals achieved an improvement of their CLABSI rate in the period from May 2010 to November 2010 per 1000 line days from 14 to five days. The hospital ascribed its success to the following contributing factors: a BCA champion, improved teamwork, communication, and strong leadership support. The limitations they experienced were staff turnover and the buy-in of medical practitioners (Faure, Van den Bergh, Youngleson, De Bruin, Ndaba & Bottoman 2011).

The implementation of the CLABSI bundle in 40 hospitals in a private hospital group in South Africa resulted in a significant decrease in the occurrence of CLABSI. With improved teamwork in the CCU the CLABSI rate decreased from 5.24/1000 catheter days to 1.34/1000 catheter days (Kantor & Van den Bergh 2011).

#### **5.3.1.7 Prevention of catheter associated urinary tract infection**

The knowledge of 16 (N=16) nurses related to the catheter associated urinary tract infection (CAUTI) bundle to prevent catheter associated urinary tract infection, was assessed. Three (n=3 [19%]) of them had a score higher than 85%. Those whose scores were lower than 85% counted 13 (n=13 [81%]). The average score was 83%; the highest was 100% and the lowest 67%. The majority of nurses (81%) were found to be not knowledgeable about the CAUTI bundle. Graph 5.7 shows the results of nurses related to their knowledge about the CAUTI bundle.



**Graph 5.7: Nurses' results related to the CAUTI bundle (N=16)**

In this study 112 (90%) of patients had a urinary catheter in situ. It was thus of paramount importance that the nurses had to be knowledgeable about the prevention of CAUTI. The prevention of CAUTI was discussed in Chapter 4, Section 4.4.1.3. In this study the assessment of the nurses' knowledge related to the prevention of CAUTI included the following criteria as set by the BCA (2011e) (see Annexure C.4):

- o avoid unnecessary urine catheters
- o insertion with aseptic technique
- o recommended daily care: maintain closed sterile system, keep properly secured, bag below bladder, frequent emptying of reservoir bag, routine meatal care
- o daily review of catheter necessity and prompt removal.

The majority of nurses, namely 81%, were found to be not knowledgeable on how to prevent CAUTI. These findings concur with those of Visser, Moore, Whitelaw, Lowman and Kantor (2011:591) that clear infection prevention and control is not practised adequately in South Africa.

De Kock (2010) stresses the importance of implementing the CAUTI bundle in patients with physical disabilities because in these patients the bladder functioning is affected. These patients are at an increased risk for developing urinary tract infection as they

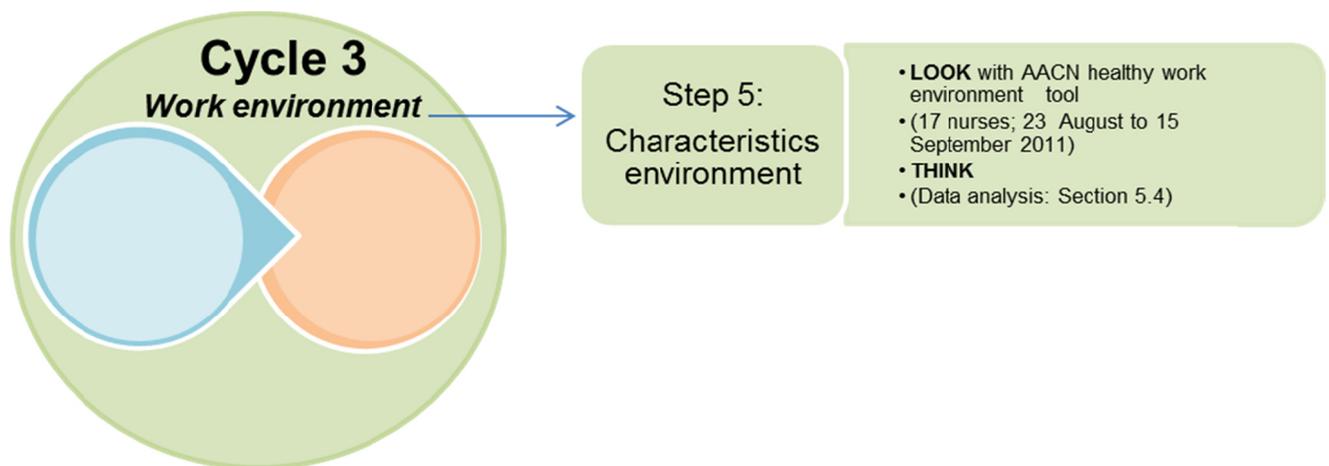
need some form of an indwelling catheter to empty their bladders. The complications of CAUTI cause pain and suffering to the patient as well as prolonged hospital stay with increased costs and mortality.

According to Visser et al (2011:591), infection prevention and control is a “neglected field of medicine in South Africa”. The lack of training among a significant number of infection control practitioners is given as the reason for the absence of clear infection prevention and control in the country. A limited budget further complicates the problem because to employ more staff, more money is needed. These authors express their concern that with the suboptimal infection prevention and control and the reluctance to involve nurses and medical practitioners, positive patient outcomes may be imperilled.

#### 5.4 Cycle 3: STEP 5: LOOK AT CHARACTERISTICS OF THE ENVIRONMENT

Although the research method was discussed in Chapter 3, the content and flow of Cycle 3 is reiterated by including Figure 5.2 in this chapter.

Figure 5.2 is a visual description of the content of Cycle 3.



**Figure 5.2: Summary of steps in Cycle 3 of this study**

##### 5.4.1 Timeframe

The timeframe during which **Cycle 3: Step 5: Assess synergy: Environmental characteristics** took place was from 23 August 2011 to 15 September 2011. The timeframe is summarised in Table 5.4 and discussed in Section 5.4.2 and Section 5.5 of this chapter.

**TABLE 5.4: Cycle 3: STEP 5: ENVIRONMENTAL CHARACTERISTICS**

LOOK	THINK	OUTCOMES
<b>Date:</b> 23 Augustus 2011 to 15 September 2011	<b>Date:</b> 15 September 2011	1. Determine the characteristics of the environment.
<b>Objective:</b> 1. Assess the characteristics of the environment (refer to Section 5.4.2)	<b>Objective:</b> 1. Analyse the characteristics of the environment (refer to Section 5.5)	

#### 5.4.2 Assess characteristics of the environment

The researcher introduced the AACN healthy work environment assessment tool to the key drivers and consensus was reached to assess the CCU according to this assessment tool. The AACN healthy work environment tool is described by Vollers et al (2009:20) as a building block for developing a flourishing healthcare environment. The researcher registered at the AACN to use the healthy work environment assessment tool to assess the characteristics of the CCU (see Annexure C.3).

A mailing list of all the nurses working in the CCU was created. The email invitation template that was generated during the last step of registering the assessment of the CCU at the AACN was copied and pasted into the message on the nurses' emails and sent to the nurses. For those nurses who did not have access to the internet, the email invitation template was copied and pasted to the selected CCU's email address for their attention. The opening date for the survey was registered as 23 August 2011 and the closing date was registered as 15 September 2011. The nurses had to follow the instructions in the invitation email and submit the completed questionnaire to the AACN for analysis (AACN 2010).

### 5.5 CYCLE 3: STEP 5: THINK ABOUT CHARACTERISTICS OF THE ENVIRONMENT

The researcher obtained the group's assessment results of a healthy work environment from the AACN. The findings pertained to skilled communication, true collaboration, effective decision making, appropriate staffing, meaningful recognition and authentic leadership and are discussed in this section.

Seventeen nurses (N=17 [94%]) completed the assessment and submitted it to the AACN for analysis. The AACN scored individual items and then gave an aggregated score with a scale to interpret the team's score for the assessment related to skilled communication. A benchmark report against which the researcher and key drivers could compare the nurses' responses was provided by the AACN. (see Annexure H for the team assessment results and the benchmark report from the AACN).

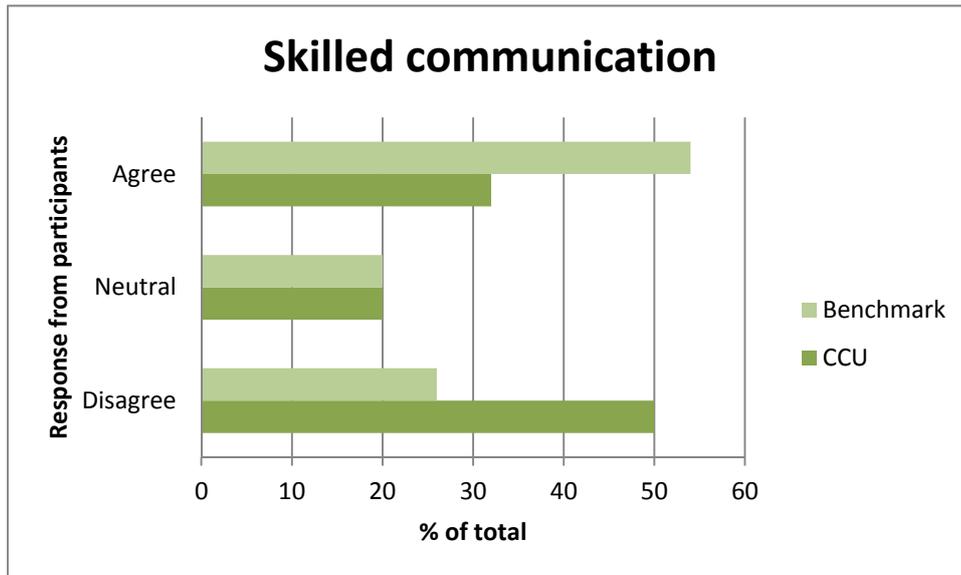
### **5.5.1 Skilled communication**

The CCU nurses' (N=17) score for the standard skilled communications was as follows: 50% of the nurses disagreed that skilled communication was one of the characteristics of the selected CCU, 32% agreed that skilled communication was a characteristic of the particular CCU and 20% decided to stay neutral on this item. Consequently, the majority (50%) disagreed with this item and the minority (32%) agreed that there was skilled communication present in the selected CCU in Gauteng.

**Note:**

For clarity purposes it must be noted that the benchmark sample the AACN used was 65 670 (Sixty-five-thousand six-hundred and seventy).

The mean score the AACN allocated to the selected CCU was 2.65. According to the scoring guidelines, the CCU's team scores fitted in with the scale 1.00–2.99 which revealed a work environment that was in need of improvement. The benchmark for the skilled communication standard was 26% (N=65 670) of participants disagreed and 20% (N=65 670) stayed neutral about skilled communication in their work environment. Fifty-four per cent (N=65 670) agreed that skilled communication was present in their work environment. The mean score of the benchmark was indicated as 3.31 and when the scale was used to assess the scores, the benchmark score was "Good" regarding the working environment of the participants. The score of the selected CCU related to the standard skilled communication was substantially lower than the comparative values obtained from the AACN. Graph 5.8 depicts the response distribution of the of the nurses on skilled communication in comparison to the benchmark distribution.



**Graph 5.8: Comparison on the distribution of nurses' response on skilled communication and the benchmark scores**

Raica (2009:343) defines verbal communication as the “primary way of transmitting vital information concerning patient issues in a hospital setting”. George Bernard Shaw wrote: “...the greatest problem in communication is the illusion that it has been accomplished...” (McCaffrey, Hayes, Stuart, Cassel, Farrell, Miller-Reyes & Donaldson 2011:121). Raica (2009:343) maintains that miscommunication poses a significant threat to patient safety and nurses lack confidence to represent their views that relate to their patients' situation. Lindeke and Sieckert (2005:1) add effective communication is the integration of both nurses' and doctors' expertise, skills and unique perceptions to deliver quality patient care. Beyea (2004:1053) posits that organisational cultures often fail to empower and support nurses in becoming skilled communicators. If Beyea's (2004) statement holds true, it gives rise to major concerns since assertiveness, confidence and emotional maturity are fundamental to effective communication which in turn enhances competence (Raica 2009:346). Refer to Chapter 2, Section 2.3.3 for the AACN's critical elements related to skilled communication.

According to the AACN's scoring guidelines the response from the nurses about their working environment indicated an opportunity for improvement. The reflections of nurses, patients and families obtained in the current study are consistent with these findings.

**Nurses' reflections:**

- “They [doctors] don't listen... [nurses] have to do what they say; the way they [the doctors] complain... feels like we are idiots... stupid...”
- “...there is no positive communication between us and [the] direct supervisor...”

**Patients' and families' reflections:**

- “My dad is physically well cared for, but we [family] don't know his real condition, we want to know if you [nurses and doctors] are satisfied with his progress...”
- **[Wish from patient]:** “That the staff is listening and able to communicate – if I had known what was happening I think it would be a lot easier to accept...”
- “Nurses must listen... they don't listen...”
- “...they [nurses] didn't have the ability to communicate...”

The background to Thornby's (2006:266) study, ***Beginning the journey to skilled communication***, was embedded in a lack of skilled communication among nurses and doctors working in a CCU. Thornby states that intimidating behaviour and poor interpersonal relationships create a culture of silence where team communication does not exist and risk quality outcomes. Studies on communication between nurses and patients confirm that it is of paramount importance that nurses in practice must be skilled communicators; at the same time, however, research studies also concur that the quality of nurses' communication skills remain an ongoing concern (Chant, Jenkinson, Randle & Russel 2002:12; Kruijver, Kerkstra, Bensing & Van de Wiel 2000:20; Vydellingum 2006:213). Mullan and Kothe (2010:377), realising the concerns about skilled communications in the nursing domain, presented a communication course to 209 first year nursing students at the University of Sydney, Australia and evaluated the impact of the training course on the students. The first year nursing students were highly satisfied after having attended the training course. According to them, their own perception of their ability to communicate improved over the course of the training programme.

In a study conducted by Wenham and Pittard (2009:180) on a critical care environment in the UK, patients expressed their fear and anxiety when not being able to communicate while intubated. The critically ill patients indicated that not being understood by nurses added to their stress levels. Wenham and Pittard (2009:179) give suggestions to improve communication between the nurses and the intubated patients.

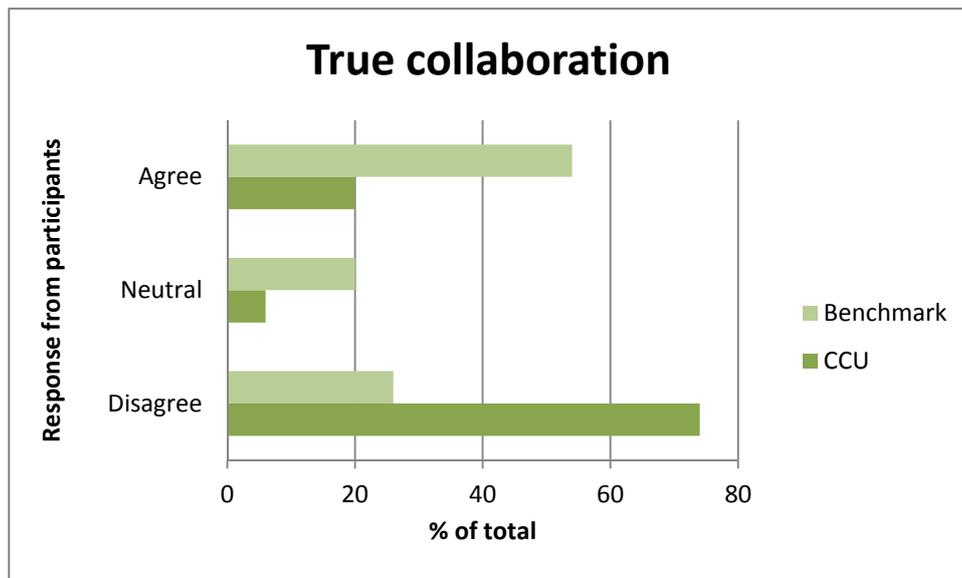
Their suggestions include the use of pen and paper, word charts, and computer voice synthesisers.

The limited time available during nurse-to-nurse handover to report the needs of patients' communication contributes to confusion and error. Nurses have to know their patients to provide quality care. The AACN Synergy Model for Patient Care provides a framework to communicate subjective and objective data concerning patients to ensure that their needs are addressed. The nurse-to-nurse communication can be aligned to the eight patient needs outlined in the model. These needs are resiliency, vulnerability, participation in decision making, participation in care, available resources, complexity, stability and predictability (Kaplow & Hardin 2007:8).

### **5.5.2 True collaboration**

The nurses' (N=17) score for the standard true collaboration was as follows: 74% of the nurses disagreed and 6% decided to stay neutral on the issue of true collaboration being one of the CCU's characteristics. Twenty per cent agreed that true collaboration was a characteristic of the CCU. The majority (74%) did not agree that there was true collaboration and the minority of nurses (20%) agreed that there was, in fact, true collaboration present in the selected CCU.

The mean score the AACN allocated to the selected CCU was 2.18. According to the scoring guidelines, the team scores fitted in with the scale 1.00–2.99 thus revealing that the specific CCU was a work environment in need for improvement. The AACN provided a benchmark against which the researcher and key drivers could compare the nurses' responses. The benchmark for the true collaboration standard was 28% (N=65 670) of participants disagreed, 23% (N=65 670) remained neutral about true collaboration in their work environment while 49% (N=65 670) agreed that true collaboration was present in their work environment. The mean score of the benchmark was indicated as 3.21 and when the scale was used to assess the scores, the benchmark score scored "Good" when related to the working environment of the participants. The score of the selected CCU when related to the standard true collaboration was substantially lower than the comparative values obtained from the AACN. Graph 5.9 depicts the response distribution of the nurses on true collaboration in comparison to the benchmark distribution.



**Graph 5.9: Comparison on the distribution of nurses' responses on true collaboration and the benchmark scores**

Rushton et al (2007:103) state collaboration occurs through relationships. Relationships and trust is built over time. In true collaboration people are willingly engaged in decision making, communicate honestly and openly, recognise others' skills and abilities and remains positive about the respective roles. Gerardi and Fontaine (2007:10) add that collaboration is both a way of **being** and a way of **doing**. These authors regard collaboration as a conscious choice towards building relationships. In these relationships the focus is on how we communicate, how we negotiate and how we resolve our differences. According to Bylone (2011:20), the intention of collaboration is to capture the team work and mutual respect that nurses have for one another. Refer to Chapter 2, Section 2.3.3 for the AACN's critical elements related to true collaboration. According to the scoring guidelines of the AACN, the nurses indicated that their environment had an opportunity for improvement. The following reflections of the nurses in practice were consistent with the findings:

**Nurses' reflections:**

- **Comment to management:** "...we thought you forget us...I hated to come to work, didn't even know I did come..."
- **Shift leader comment:** "...Cannot work like this [no positive feedback]... not me [shift leader]...none of us [nurses]... we are going to resign..."

Andres (2011) advocates for true collaboration between nurses and doctors as it improves patient safety and leads to a significant reduction in errors. Andres' (2011) advice to both nurses and medical practitioners is to treat others with dignity and respect, know each other's professional strengths and weaknesses, and build on the strengths to improve one's own professional development and to be a mentor to others to improve their knowledge and expertise. Bucknal (2003:310) states positive relationships among nurses, medical practitioners, patients and their families improve patients' satisfaction, decrease their length of stay and increase collaboration.

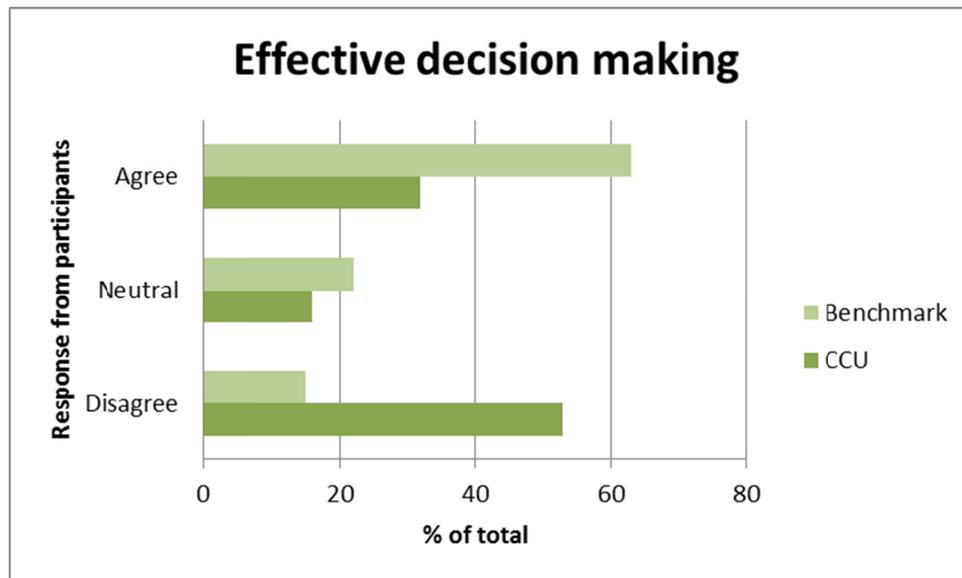
Wood (2012) emphasises the contribution of true collaboration to good patient care and quotes the words of the managing director of the Cleveland Clinic Center of Multidisciplinary Simulation about true collaboration " ...team approach makes the largest change in outcomes for patients." Wood also endorses the view of Cole Edmonson, vice-president of patient care services and chief nursing officer at the Texas Health Presbyterian Hospital in Dallas, USA, who said: "Care is too complex today for any one discipline to direct the multitude of caregivers and disciplines that make up the modern care teams"

### **5.5.3 Effective decision making**

The nurses' (N=17) scores for the standard effective decision making are given next. The majority who disagreed was 53%. Those who chose to stay neutral constituted 16% and 32% of the nurses agreed that effective decision making was a characteristic of the CCU. The minority of nurses (32%) hence agreed that there was effective decision making present in the specific CCU.

The mean score the AACN allocated to the selected CCU was 2.63. According to the scoring guidelines the team scores fitted in with the scale 1.00–2.99 that revealed a work environment in need for improvement. The AACN provided a benchmark against which the researcher and key drivers could compare the nurses' response. The benchmark for the effective decision making standard was 15% (N=65 670) of participants disagree and 22% (N=65 670) stayed neutral about effective decision making in their work environment. Sixty-three per cent (N=65 670) agreed that effective decision making was present in their work environment. The mean score of the benchmark was indicated as 3.55 and when the scale was used to assess the scores,

the benchmark score scored “Good” concerning the working environment of the participants. The score of the selected CCU related to the standard effective decision making was substantially lower than the comparative values obtained from the AACN. Graph 5.10 depicts the response distribution of the of the nurses on effective decision making in comparison to the benchmark distribution.



**Graph 5.10: Comparison on the distribution of nurses’ responses on effective decision making and the benchmark scores**

The process of coming to a choice is the essence of decision making. According to Bjork and Hamilton (2011:1), nurses are continually challenged to make decisions of care. Concrete experiences develop clinical judgement or decision making (Grossman, Krom & O’Connor 2010:138). According to the AACN (2005:24), nurses are uniquely positioned to gather, interpret and integrate data from patients to formulate nursing diagnoses, intervene and evaluate the outcomes. If nurse are not involved in decision making it may end in costly errors. Chapter 2, Section 2.3.3 describes the AACN’s view on critical elements related to effective decision making. The AACN score on the response of the nurses indicated an opportunity for improvement.

**Note:**

There were no reflections of patients and the nurses related to effective decision making in the selected CCU.

According to Hancock and Durham (2007:104) different terms are used interchangeably in literature to define clinical decision making. The terms used are judgment making, clinical judgment, clinical inference, clinical reasoning and problem solving. These terms are interchangeable as they entail a choice made by nurses from a number of alternatives. Hancock and Durham (2007:104) state several factors influence the decisions of critical care outreach nurses, namely their clinical experience, knowledge of the context where they work, colleagues, their confidence in formulating a nursing diagnosis, ability to take responsibility for the decisions they make, relationships, the hierarchy and their own personal beliefs.

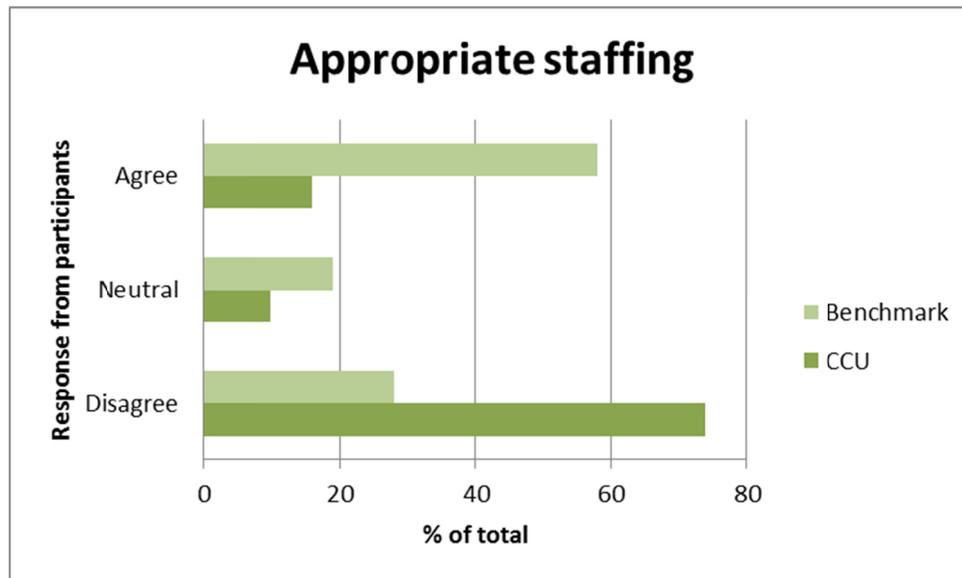
Good (2009:14) regards effective decision making as the cornerstone of clinical practice and believes that decision making will continue to be a challenge in the ever-changing critical care environment. Good (2009:14) also supports the norm that all clinical decisions have to be evidence informed.

#### **5.5.4 Appropriate staffing**

The nurses' (N=17) score for the standard appropriate staffing rendered the following results. Seventy-four per cent of the nurses disagreed, 10% decided to stay neutral while 16% agreed that appropriate staffing was a characteristic of the CCU. The majority of nurses (74%) disagreed and the minority (16%) agreed that there was appropriate staffing present in the CCU.

The mean score the AACN allocated to the selected CCU was 2.12. According to the scoring guidelines the team scores fitted in with the scale 1.00–2.99 that revealed a work environment in need for improvement. The AACN provided a benchmark against which the researcher and key drivers could compare the nurses' responses. The benchmark for the appropriate staffing standard was 28% (N=65 670) of participants disagreed and 19% (N=65 670) stayed neutral about appropriate staffing in their work environment. Fifty-eight per cent (N=65 670) agreed that appropriate staffing was present in their work environment. The mean score of the benchmark was indicated as 3.29 and when the scale was used to assess the scores, the benchmark score scored "Good" when related to the working environment of the participants. The score of the selected CCU related to the standard appropriate staffing was substantially lower than the comparative values obtained from the AACN. Graph 5.11 depicts the response

distribution of the nurses on appropriate staffing in comparison to the benchmark distribution.



**Graph 5.11: Comparison on the distribution of nurses' response on appropriate staffing and the benchmark scores**

According to Patrician, Loan, McCarthy, Fridman, Donaldson, Bingham and Brosch (2011:64), appropriate staffing means to determine the right nursing skill mix at the right time for the right patients. These authors' findings are consistent with the findings of Valentine et al (2008:331) that adverse events occur during shifts with fewer staff and with an inappropriate nurse skill mix. Furthermore, DeVandry and Cooper (2009:471) add that environmental structures and work processes, implementation of evidence-informed practice and the healthcare providers' commitment to deliver excellent patient care have an impact on staffing.

Vollers et al (2009:24) suggest rewarding nurses who remain at the bedside providing the care when they advance from novice to expert. Aiken, Ying, Clarke and Douglas (2007:335) found the assumption that supplemental staff compromise quality of care is not true. They state reality showed that organisations that had to make use of supplemental staff found them to be well-educated and having the same experience as permanent staff. Chapter 2 Section 2.3.3 provides the critical elements of the AACN related to appropriate staffing.

According to the nurses' responses, the AACN score indicated an opportunity for improvement. Eighty-one per cent of the nurses felt that there were inappropriate staffing in the CCU and, in relation to the other five components this component rendered the highest disagreement percentage. Doctors', nurses' and families' reflections in practice are consistent with these findings as indicated below.

### **Nurses' and doctors' reflections**

- *"We [the nurses] often see incompetency... shift leader has to intervene... safety of patients are compromised..."*
- *"We [the doctors] are losing confidence...when we enter the ward [CCU ward]...we don't feel there is control..."*
- *"We [the nurses] are not respected anymore... nurses only take orders... we have to take our position back... be respected... what we deserve..."*

According to the WHO, sub-Saharan Africa has a critical shortage of healthcare practitioners (doctors, nurses, and midwives) and an increase of 140% of is needed to meet the threshold of 14 370 nurses (Wildschut & Mqolozana 2008:9). The projection in the USA is that there will be a nursing shortage with the aging of the "baby boomers" (people born in 1960s) with an accompanied increased demand on healthcare (Americans for nursing shortage relief 2009). In a study conducted in South Africa by Wildschut and Mqolozana (2008:61) the age distribution of nurses was also found to be of concern as 32.8% of nurses were between the ages of 40-49 years while only 1.3% were younger than 25. These findings indicate a situation of absolute scarcity and are consistent with the findings of the Americans for nursing shortage relief.

Unskilled staffing is raising competent nurses' stress levels while the staff shortage has an impact on job satisfaction and result in nurses leaving the profession (Americans for nursing shortage relief 2009). Another alarming aspect is that nurses enter the profession at auxiliary level and reflect an absolute scarcity in skilled nurses. Reflecting on this situation, Wildschut and Mqolozana (2008:61) opine that a nursing crisis is imminent.

According to Bray, Wren, Baldwin, St Ledger, Gibson, Goodman and Walsh (2010:109), the UK's professional critical care associations collaborate to compile standards for nurse staff ratios in CCUs. Although standards have been established, these authors

found that to measure nurses' contribution in a CCU was difficult; according to their findings, it was evident that the higher the number of registered nurses the better the safety and patient outcomes. In the current study the majority of nurses (n=16 [89%]) were registered nurses.

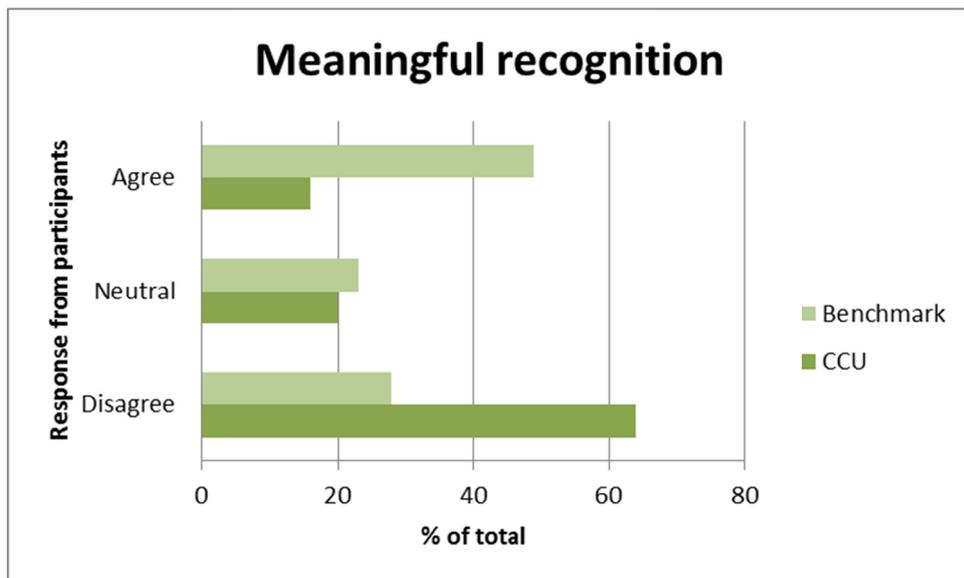
The Therapeutic Intervention scoring system is, according to Kisorio and Schmollberger (2009:43), a scientific, objective instrument to quantify nursing workload in the South African CCUs given the current nursing shortage and the increased needs of the critically ill patient. In the selected CCU the number of patients allocated to nurses was determined by the patients' acuity. The acuity was done against a key in the daily workbook of the CCU. The more complex, unstable and unpredictable a patient was the lower was the nurse/patient ratio. If the score was 24 it indicated that the patient needed a nurse next to his or her bed 24/24 hours and the nurse/patient ratio was one nurse for each patient. Patients with a score of below 18 were transferred to the general ward. An acuity score of 18 indicated that the patients needed a nurse 18/24 hours to take care of them. With an acuity score of 18 two patients were allocated in the care of one nurse. The Therapeutic Intervention scoring system is considered by the selected hospital's management to be used to determine the nurse/patient ratio in the CCU, but it at the time this study was conducted it had not been realised yet.

### **5.5.5 Meaningful recognition**

As regards the nurses' score for the standard meaningful recognition, 64% (N=17) disagreed and 20% decided to stay neutral. Sixteen per cent of the nurses agreed that meaningful recognition was a characteristic of the CCU. Hence, the majority (64%) disagreed whereas the minority (16%) agreed that there was meaningful recognition in the selected CCU.

The mean score the AACN allocated to the selected CCU was 2.18. According to the scoring guidelines, the team scores fitted in with the scale 1.00–2.99 that revealed a work environment in need for improvement. The AACN provided a benchmark against which the researcher and key drivers could compare the nurses' responses. The benchmark for the meaningful recognition standard was 28% (N=65 670) of participants disagreed and 23% (N=65 670) stayed neutral about meaningful recognition in their work environment. The percentage who agreed that meaningful recognition was present

in their work environment constituted 58% (N=65 670). The mean score of the benchmark was indicated as 3.22 and when the scale was used to assess the scores, the benchmark score scored “Good” where the working environment of the participants was concerned. The score of the selected CCU related to the standard meaningful recognition was substantially lower than the comparative values obtained from the AACN. Graph 5.12 depicts the response distribution of the nurses on meaningful recognition in comparison to the benchmark distribution.



**Graph 5.12: Comparison on the distribution of nurses’ response on meaningful recognition and the benchmark scores**

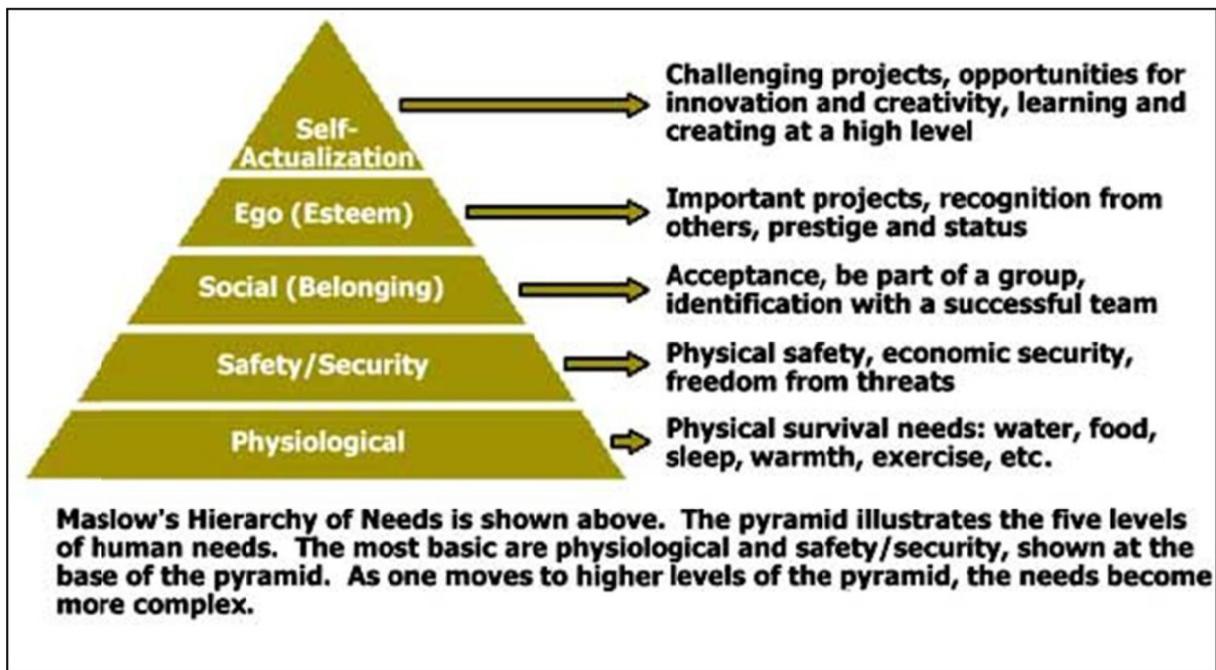
According to Vollers et al (2009:24), it is common for people to seek recognition for adding value in all aspects of life. It is the view of Good (2009:17) as well as McConnell (1997:83) that all humans need recognition. These authors concur that, in the workplace, recognition creates a sense of value for the employees and when employees feel valued it increases job satisfaction and decreases staff turnover. Reward programmes reinforce positive behaviour; in a specifically challenging healthcare environment such as the CCU, such programmes can improve nurses’ morale significantly (Clevenger 2008:8). In Chapter 2, Section 2.3.3 the AACN’s critical elements related to meaningful recognition is provided. The score of the nurses’ responses related to meaningful recognition scored by the AACN indicted an opportunity for improvement. The reflections of nurses given below were consistent with these findings.

**Nurses' reflections:**

- *"It feels like nobody [supervisors] appreciates our work..."*
- *"We feel good when [the] doctor said this patient needs a ward touch..."*
- *"No appreciation demotivates us..."*
- *"We are overworked and under paid..."*

For Ester (2008:46), the fundamental factors in job satisfaction that cannot be ignored are recognition and appreciation. Ester (2008:46) regards the mismatch between the importance of being recognised and the perceived level of recognition as an indication for organisations to change both their recognition initiatives and the work culture to one in which nurses will feel valued and appreciated. The selected hospital had a hospital group rewarding system and the deputy nursing service manager identified performers and rewarded them. The discrepancy between the importance of recognition and the perceived level of recognition in the selected CCU was significant: 64% (n=17) of the nurses agreed that meaningful recognition was **not** experienced in the selected CCU.

According to Carter (2012), the need to be meaningfully recognised is outlined on five levels in Abraham Maslow's hierarchy of needs. Depicted on the first level are a person's physiological needs, on the second level the need for safety and security is positioned while level 3 entails one's need for belonging. Level 4 is the level of the ego which relates to a person's need for recognition, prestige and status. The top level, level 5, is where self-actualisation results in people having achieved peace – with their accomplishments, in themselves, and with their surroundings. When one has reached the fifth level, true satisfaction with one's career and life ensues. According to Maslow, these needs have to be fulfilled in the vertical correct order, thus from level 1 to 5; if this order does not occur or if one level has not been satisfactorily fulfilled, one cannot move to the next level and frustration occurs (Maslow 1970:45). Figure 5.3 illustrates Maslow's hierarchy of needs.



(Adopted from Carter 2012)

**Figure 5.3: Maslow's hierarchy of needs**

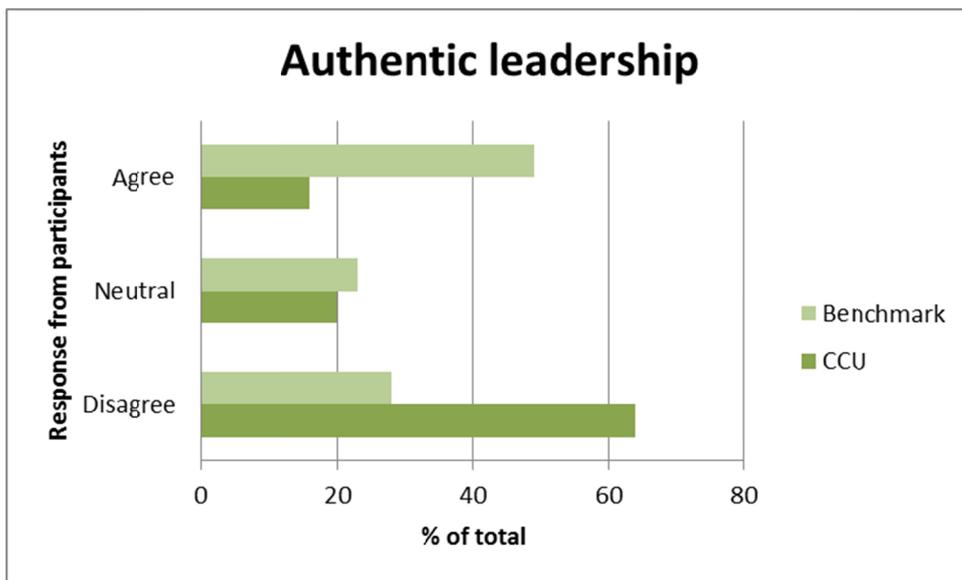
The two levels, according to Carter (2012), that correlate to meaningful recognition is a person's social need for belonging (level 3) and one's need to be recognised by others (level 4). People have a need to be loved, to belong to a group and to be accepted (level 3). Level 4 is where the ego (the person or persons) needs to be heard, to be wanted, to be competent and to achieve tasks and receive praise and acknowledgement for work well done. If nurses' belonging (level 3) and recognition (level 4) needs are not satisfied, true satisfaction with their career and life will not be achieved.

### 5.5.6 Authentic leadership

The nurses' (N=17) score for the standard authentic leadership indicated that 55% disagreed and 24% decided to stay neutral but 22% of the nurses agreed that authentic leadership was a characteristic of the CCU. The majority of nurses (55%) felt there was no authentic leadership while the minority (22%) experienced that there was indeed authentic leadership in the CCU.

The mean score the AACN allocated to the selected CCU was 2.51. According to the scoring guidelines, the team scores fitted in with the scale 1.00–2.99 that revealed a work environment in need for improvement. The AACN provided a benchmark against

which the researcher and key drivers could compare the nurses' responses. The benchmark for the authentic leadership standard was 17% (N=65 670) of participants disagreed, 21% (N=65 670) stayed neutral about authentic leadership in their work environment and 62% (N=65 670) agreed that authentic leadership was present in their work environment. The mean score of the benchmark was indicated as 3.52 and when the scale was used to assess the scores, the benchmark score scored good related to the working environment of the participants. The score of the selected CCU related to the standard authentic leadership was substantially lower than the comparative values obtained from the AACN. Graph 5.13 depicts the response distribution of the nurses on authentic leadership in comparison to the benchmark distribution.



**Graph 5.13: Comparison on the distribution of nurses' response on authentic leadership and the benchmark scores**

Authentic leadership is described by George (2003:11) as leaders who serve others through their leadership skills and who make a difference by empowering the people they lead; power, money and prestige for themselves are not priorities. The authentic leader accepts her or his responsibility as a leader who is genuine, trustworthy, reliable and believable. George's (2003:11) delineation of the five characteristics authentic leaders have is supported by Gengler et al (2009:20). These five authentic leadership characteristics underlined by Both, George (2003:11) and Gengler et al (2009:20) are:

- o the ability of leaders to understand their own purpose
- o leaders practice solid values
- o they lead with the heart

- o they establish enduring relationships
- o leaders practice self-discipline.

The score the response of nurses related to authentic leadership obtained from the AACN indicated an opportunity for improvement. At the time this study was conducted the selected CCU had been functioning without a unit manager for eight consecutive months. In Chapter 2, Section 2.3.3 the AACN's view related to critical elements for authentic leadership is provided. The reflections of nurses in practice correlated with the nurses' reflections related to true collaboration.

### **Nurses' reflections:**

- **Comment to management:** "...we thought you forget [had forgotten] us...I hated to come to work, didn't even know I did come..."
- **Shift leader comment:** "Cannot work like this [with no positive feedback]... not me [the shift leader]...none of us [nurses]... we are going to resign..."

McCauley (2005:2) regards an authentic leader as the glue that holds a healthy work environment together. The unit manager of the CCU resigned in March 2011 and from then, up to the time the time this study was conducted and during the time of the investigation itself, the CCU was operating without a unit manager. Gengler et al (2009:20) emphasises that nurse leaders are crucial for the successful creation of a safe and healthy work environment. Similarly, Tulgan (2007:13) states everyone performs better with guidance, direction and support from an experienced person. The qualities the unit manger should have are discussed in Chapter 5, Section 5.6.6.

In November 2011 the nurses and the researcher reached consensus that the CCU was busy falling apart without the "glue" of a unit manager and, according to the human resources department, they had been unsuccessful in finding a suitable candidate to appoint as a unit manager. The researcher and the nurses, however, were in agreement that the management had the responsibility to appoint an acting unit manager. The researcher together with the nurses convinced one of the shift leaders to volunteer and act as a unit manager. Although management did not approve the CCU's request for an acting unit manager, they did give consent for a shift leader to work four days a week, primarily to ensure continuity of care and to be the contact person in the CCU. The authoritative power, however, remained with the deputy nursing service

manager. The multidisciplinary team were informed about the decision, and the nurses, the researcher and the medical practitioners assured her of their support. The appointed shift leader kept continuity of care with the support of the multidisciplinary team. Subsequently, team work in the unit was augmented in a positive manner and, more importantly, a decisive step was taken towards restoring the process by an enhanced feeling of 'together we can'. On 30 June 2012 a unit manager had still not been appointed.

## **5.6 SUMMARY**

In Chapter 5 the assessment of the existing synergy through assessing the nurses' competencies and the environmental characteristics that encompassed Cycle 2, Step 4 and Step 5 in this study, was discussed. Objectives were set and the outcome was to assess the nurses' competencies related to the patients' physiological and physical needs. The assessment of the characteristics of the environment related to the AACN's six standards of a healthy work environment.

The **LOOK** and **THINK** phases of the cyclic approach in active research were implemented. The competencies of the nurses and the characteristics of the environment were analysed by the AACN.

In Chapter 6 the researcher and the statistician assess the existing synergy in the selected CCU and the researcher and the nurses formulate a plan of action to collaboratively embark on a journey to enhance synergy in the particular CCU.

**PHASE 2****CHAPTER 6  
TOWARDS SYNERGY**

“When a team outgrows individual performance and learns team confidence, excellence becomes a reality.”

Joe Paterno (2012)

**6.1 INTRODUCTION**

Chapter 5 focused on the assessment of the nurses’ competencies and the assessment of the characteristics of the environment in the CCU of a selected hospital in Gauteng. In Chapter 6: **PHASE 2: Cycles 4 and 5** the focus is on the researcher’s and nurses’ journey towards enhancing synergy in a CCU in a selected hospital in Gauteng. In this chapter the **LOOK** and **THINK** of Cycle 4 about existing synergy is firstly addressed followed by the **ACT** of Cycle 4. The journey towards synergy continues with Cycle 5 and at the end of this chapter the researcher’s journey towards enhancing synergy in a selected hospital in Gauteng ends.

**PHASE 2  
Cycles 4 and 5**

## 6.2 Cycle 4: TOWARDS SYNERGY

Although the research method was discussed in Chapter 3 the application of the routine of **LOOK**, **THINK** and **ACT** in this study is reiterated by including Figure 3.4 as Figure 6.1 in this chapter.

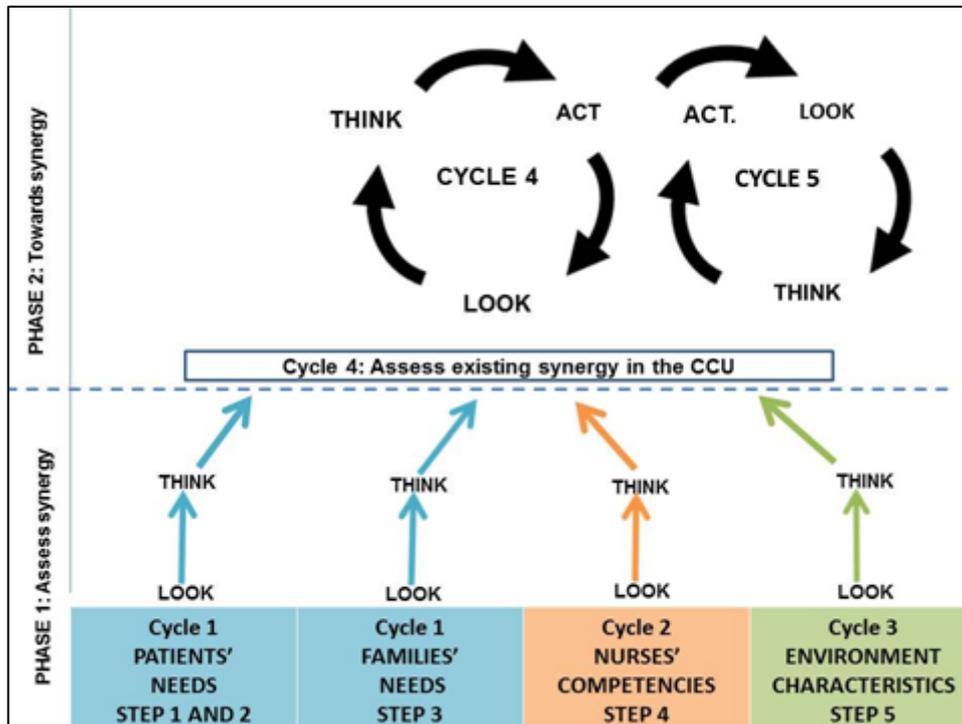


Figure 6.1: The application of the routine of LOOK, THINK and ACT in this study

### 6.2.1 Timeframe

Cycle 4: Towards synergy commenced on 9 October 2011 and was based on the findings obtained from the assessment of the patient needs, the nurse competencies and the characteristics of the environment (Chapters 4 and 5). The implementation was planned to begin on 7 November 2011. For the purpose of this study the researcher indicated that the implemented plan should be reviewed for the first time from 28 to the 30 December 2011. Table 6.1 summarises the timeframe and objectives of Cycle 4 which comprised of the three stages **LOOK**, **THINK** and **ACT** as advised by Stringer (2007:128) and which is discussed in this chapter.

**TABLE 6.1: Cycle 4: TOWARDS SYNERGY**

LOOK	THINK	ACT
<p><b>Date:</b> 9 to 12 October 2011</p>	<p><b>Date:</b> 9 to 12 October 2011</p>	<p><b>Date:</b> 13 October to 30 December 2012</p>
<p><b>Objective:</b> 1. Assess existing synergy in the CCU (refer to Section 6.2.2)</p>	<p><b>Objective:</b> 1 Reflect on existing synergy in the CCU (refer to Section 6.2.2)</p>	<p><b>Objectives:</b> 1 Prioritise and plan actions to enhance synergy 2 Activate implementation of the planned actions 3 Review the action plan 28 to 30 December 2011. (refer to Section 6.3)</p>

### 6.2.2 CYCLE 4: Assess existing synergy in the CCU

According to the AACN Synergy Model for Patient Care, synergy in patients' needs drive the nurses' competencies and if supported by a healthy work environment optimal outcomes will be ensured on the levels of the patient, the nurse and the system (Good 2009:4; Kaplow & Hardin 2007:4). Therefore, the researcher and a statistician used the assessed data related to the nurses' competencies and the characteristics of the environment to make the following conclusions related to the existing synergy in a selected CCU.

#### 6.2.2.1 LOOK and THINK nurses' competencies

The descriptive statistics for the different competency scores are discussed in Chapter 5, Section 5.3. The inferential statistics are shown in Table 6.2 with discussions following.

**TABLE 6.2: INFERENCE STATISTICS RELATED TO THE NURSES' COMPETENCIES IN A CCU**

VARIABLE	N	MEAN	LOWER 95%	UPPER 95%	STD DEV.	MEDIAN	LOWER QUARTILE	UPPER QUARTILE	MINIMUM	MAXIMUM
			CL for MEAN	CL for MEAN						
<b>Cardiac monitoring score</b>	16	78.9	72.7	85.0	11.6	79.5	77	86.5	49	96
<b>Mechanical ventilation score</b>	16	78.6	67.9	89.2	20.0	89.5	62.5	94.5	40	98
<b>ABG analysis score</b>	16	81.9	74.0	89.9	14.9	82	82	91	36	100
<b>Chest radiograph interpretation score</b>	9	80.0	61.6	98.4	23.9	80	80	100	27	100
<b>VAP score</b>	16	35.9	19.8	52.0	30.2	25	12.5	75	0	75
<b>CLABSI score</b>	16	61.4	54.3	68.6	13.4	57	57	71	29	86
<b>CAUTI score</b>	16	83.2	77.6	88.7	10.4	83	83	83	67	100

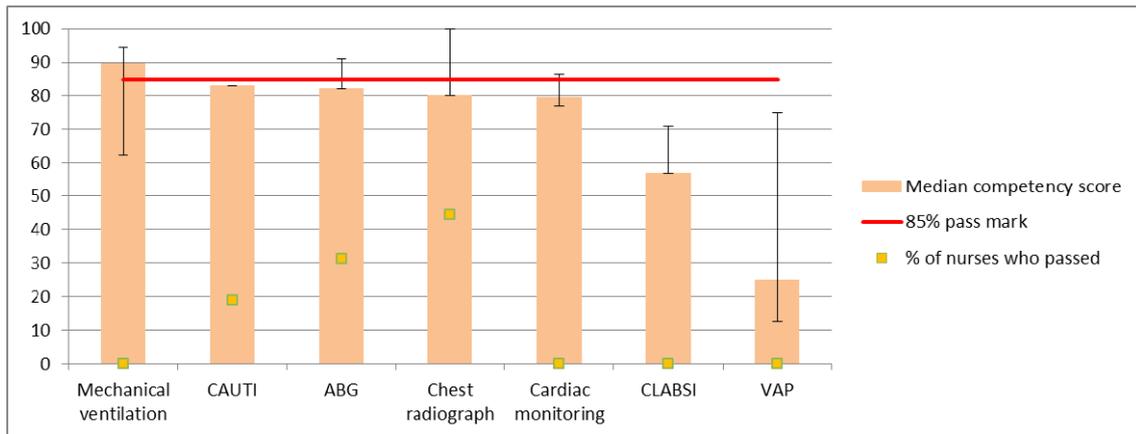
Since such a small sample size (N=16) was used and some of the scores were not normally distributed, the statistician plotted the medians and interquartile ranges of the scores. The median is the score below which 50% of the scores lie. The other 50% of the scores lie above the median while the interquartile range is the range within which the middle 50% of the scores lie.

The plot showed that, with the exception of mechanical ventilation, the median scores for the competencies lay below the pass mark of 85%. The plot is, however, misleading, because obtaining a score of 85% or more could still result in failing the competency assessment if certain requirements in the assessment were not met. For this reason, the outcomes were also classified as “Pass” or “Fail”. The proportion of nurses who passed the assessment for each skill is tabulated in Table 6.3. Of the shift leaders, 44% (N=9) passed the competency related to the interpretation of a chest radiograph and 31.3% (N=16) passed the ABG analysis. The percentage that passed the competency related to the prevention of CAUTI was 18.8% (N=16). In the assessment of the prevention of CLABSI and VAP, cardiac monitoring and mechanical ventilation none of the nurses passed.

**TABLE 6.3 COMPETENCY WITH PASS RATE OF NURSES**

<b>COMPETENCY</b>	<b>% PASS</b>
Cardiac monitoring	0.0
Mechanical ventilation	0.0
ABG analysis	31.3
Chest radiograph interpretation	44.4
VAP	0.0
CLABSI	0.0
CAUTI	18.8

Graph 6.1 is a visual presentation of the median competency score, the 85% pass mark and the percent of nurses who passed.



**Graph 6.1: Visual presentation of nurses' competencies**  
**(The error bars show the interquartile range)**

Graph 6.1 shows the following:

- Although **mechanical ventilation** had the highest median score (in excess of 85%), none of the nurses passed the assessment.
- Although CAUTI, ABG and chest radiograph had median scores of over 80%, the pass rates were in fact under 50%.
- The highest pass rate was that for interpretation of chest radiographs. This was expected as it was assessed at shift leader level.
- The median score for cardiac monitoring was fairly high (just under 80%) and none of the nurses passed the assessment.
- The lowest median scores were for CLABSI and VAP. None of the nurses passed the assessment.

The statistician looked at whether there were differences in the competency scores and the "Pass/Fail" proportions between the nurse types. For the competency scores, given the low sample size, the statistician used a non-parametric alternative to the one-way ANOVA, namely the Kruskal-Wallis test. There were no significant differences between the competency scores of the different types of nurses for any of the competencies. Table 6.4 illustrates the variable and the result of the Kruskal-Wallis test.

**TABLE 6.4: RESULTS OF VARIABLES AND KRUSKAL-WALLIS TEST**

VARIABLE	KRUSKAL-WALLIS TEST: p-VALUE
Cardiac monitoring score	0.23
Mechanical ventilation score	0.32
ABG interpretation score	0.080
Chest radiograph interpretation score	0.076
VAP score	0.85
CLABSI score	0.51
CAUTI Score	0.42

For the Pass/Fail categorisation, the statistician used the Fisher exact test. This analysis could not be done for mechanical ventilation, cardiac monitoring, CLABSI or VAP since all nurses failed these competencies. There were no significant differences between the “Pass/Fail” proportions of the different types of nurses for any of the other competencies. Table 6.5 shows the results of the Fisher exact test.

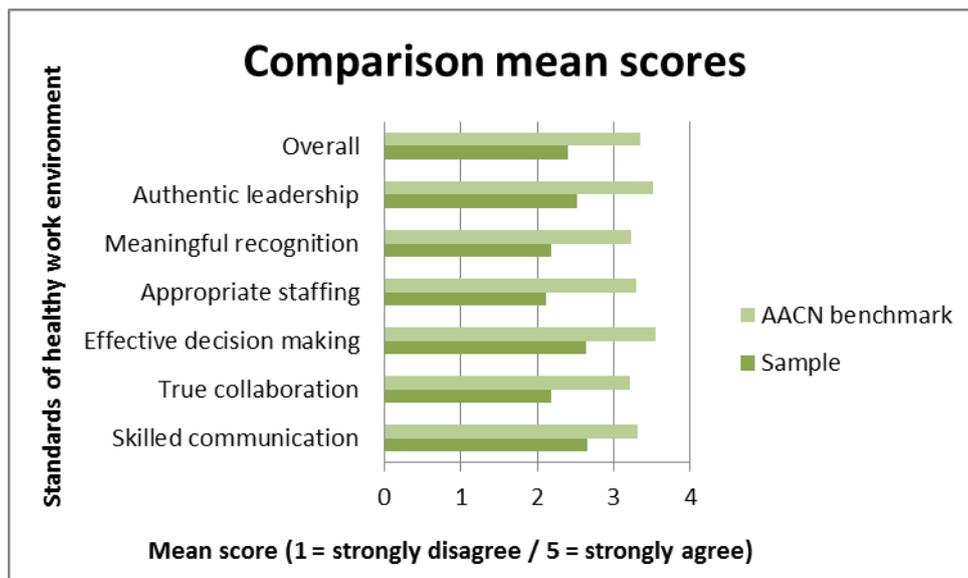
**TABLE 6.5: FISHER’S EXACT TEST RESULTS**

VARIABLE	FISHER EXACT TEST: p-VALUE
Cardiac monitoring	n/a
Mechanical ventilation	n/a
ABG	0.31
Chest radiograph	0.52
VAP	n/a
CLABSI	n/a
CAUTI	1.0

From the conclusions the statistician made based on the inferential statistics, it was evident that there was a mismatch between the patients’ needs and the nurses’ competencies assessed for the purpose of this study.

### 6.2.2.2 LOOK and THINK characteristics of environment

The successful outcomes for the patients and nurses depend on the characteristics of the environment. True synergy can be achieved only if patients' needs, nurses' competencies and the characteristics of the environment work synergistically to support the patient (Good: 2009:4; Kaplow & Hardin 2007:4). To determine if the characteristics in the selected CCU's environment was conducive for answering the patients' needs and nurturing the professional environment for nurses, the statistician used the mean scores for the 6 standards of a healthy work environment as discussed in Chapter 5, Section 5.4. The statistician included the overall mean score along with the AACN benchmark scores to make conclusions about the working environment in the selected CCU. The conclusions are illustrated in Graph 6.2 below (see Annexure H on CD for a comparison of the team assessment results and the benchmark report from the AACN).



**Graph 6.2 Comparison of assessment results and the AACN benchmark report**

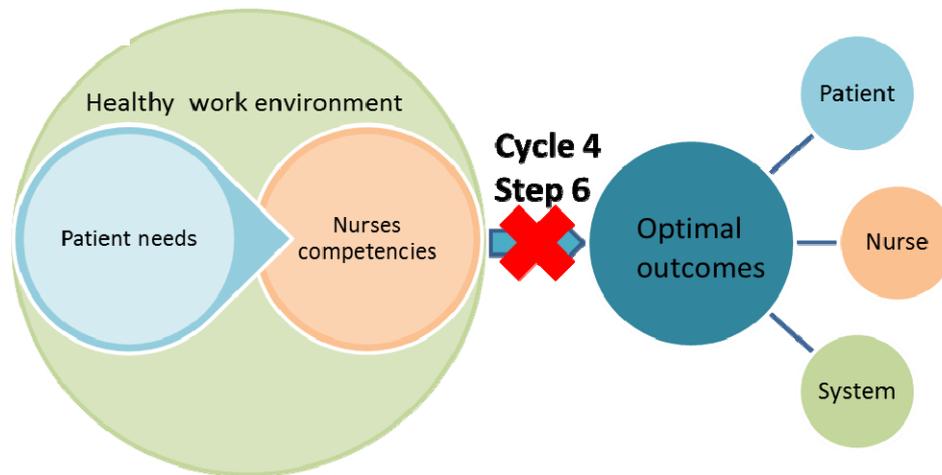
The conclusions drawn by the statistician from the scores illustrated in Graph 6.2 are listed next.

- All the scores fell into the “Needs improvement” category.
- All the scores were substantially lower than the comparative values obtained from the AACN.
- The lowest scores applied to the appropriate staffing, meaningful recognition and true collaboration categories.

- Among the individual questions, the lowest scores were for the following questions:
  - o the formal reward and recognition systems work to make nurses and other staff feels valued
  - o nurses and other staff feel able to influence the policies, procedures, and bureaucracy around them
  - o administrators and nurse managers work with nurses and other staff to make sure there are enough staff to maintain patient safety.
  
- Among the individual questions, the highest scores were for the questions:
  - o the administrators, nurse managers, physicians, nurses and other staff maintain frequent communication to prevent each other from being surprised or caught off guard by decisions
  - o there are motivating opportunities for personal growth, development, and advancement
  - o the administrators, nurse managers, physicians, nurses and other staff are consistent in their use of data-driven, logical decision-making processes to make sure their decisions are the of highest quality
  - o nurse leaders (managers, directors, advanced practice nurses, and so forth) are given the access and authority required to play a role in making key decisions.

From the conclusions the statistician made based on the characteristics of the environment, it was evident that the working environment in the selected CCU was not conducive to answer the patients' needs and nurture the professional environment for nurses.

For the benefit of the reader Figure 3.9 is repeated as Figure 6.2 for the conclusion on Step 6. The red cross illustrates that synergy in the CCU is disrupted and could jeopardise optimal outcomes for the patient, the nurse and the system.



**Figure 6.2: Cycle 4: Step 6: Disrupted synergy could jeopardise optimal outcomes**

The **LOOK** and **THINK** of Cycle 4 was followed with **ACT** in Cycle 4. The **ACT** was conducted in three consecutive steps, namely **PLAN**, **IMPLEMENT** and **REVIEW** as suggested by Stringer (2007:128).

### 6.3 Cycle 4: ACT

The **ACT** in Cycle 4 included the prioritising and planning towards enhancing synergy in the selected CCU, the implementing of the action plan and the reviewing of the action plan.

#### 6.3.1 Prioritise and plan actions to enhance synergy in the CCU

Step 7 began with the researcher extending an open invitation on 13 September 2011 to all the nurses working in the CCU to attend a focus group that would centre on a collaborative approach to enhance synergy in the CCU. The researcher asked nurses from the neuro-orthopaedic CCU unit to care for the patients in the selected CCU for the duration of the focus group. This arrangement was made to give all the nurses an equal opportunity to attend the focus group and be involved in formulating an action plan towards enhancing synergy in the CCU. An experienced focus group leader conducted the group and the researcher took field notes.

Seven (39%) of the nurses as well as the deputy nursing service manager attended the scheduled focus group on 13 October 2011 where all those present were involved in the

prioritising and planning of actions towards enhancing synergy in a CCU (see Annexure N.1 on CD for the attendance register). The action plan was based on the outcomes of the SOAR analysis. The process of the SOAR analysis is discussed in Chapter 3, Section 3.4.4.

Table 6.6 provides an overview of the themes and categories identified by the nurses related to their and the CCU's **S**trengths, **O**pportunities, **A**spirations and **R**esults.

**TABLE 6.6: SUMMARY OF THE SOAR ANALYSIS OF THE SELECTED CCU**

THEME	CATEGORY
<b>STRENGTHS</b>	
Nurses' competency	<ul style="list-style-type: none"> <li>• Skills and knowledge</li> <li>• Values and attitudes</li> </ul>
Patient care	<ul style="list-style-type: none"> <li>• Achieve patient goals</li> <li>• Decrease patients' length of stay</li> </ul>
Environment	<ul style="list-style-type: none"> <li>• True collaboration</li> </ul>
<b>OPPORTUNITIES</b>	
Environment	<ul style="list-style-type: none"> <li>• True collaboration</li> </ul>
<b>ASPIRATIONS</b>	
Nurses' competency	<ul style="list-style-type: none"> <li>• Skills</li> <li>• Evidence informed</li> <li>• Vision</li> </ul>
Patient care	<ul style="list-style-type: none"> <li>• Patient satisfaction</li> </ul>
<b>RESULTS</b>	
Patient outcomes	<ul style="list-style-type: none"> <li>• Patient satisfaction</li> </ul>
Nurses outcomes	<ul style="list-style-type: none"> <li>• Competent, skilled</li> </ul>
Environment outcomes	<ul style="list-style-type: none"> <li>• 'Unit of Excellence'</li> </ul>

The SOAR analysis is discussed according to the three components of the AACN Synergy Model for Patient Care as it was evident in the SOAR analysis that the three components, namely the patient, the nurse and the environment was prominent in the **S**trengths, **O**pportunities, **A**spirations and **R**esults of the nurses.

The researcher and an experienced coder analysed the data from the notes the nurses had made in the focus group (see Annexure N.3 on CD) and the extensive field notes the researcher had made during the focus group.

- **The patient**

The patient is discussed first as the researcher and the nurses reached consensus that the patient is the centre of care and if synergy exists patient needs will be answered with competent nurses in a healthy work environment (Kaplow & Hardin 2007:4).

Based on the findings, patient care emerged as one broad central theme. The nurses regarded patient care as one of their strengths while patient satisfaction was, according to them, the result of being a '*Unit of Excellence*'. The themes and related categories are discussed below.

- o **Theme: Patient care**

According to Good (2009:3), patients and families demand quality patient care. Reuben and Tinetti (2012:777) observe that positive patient outcomes can be obtained if healthcare are individualised, patient-centred and if patients' needs, preferences and values guide clinical decision making. Patient outcomes are discussed in Chapter 2, Section 2.3.

Regarding patient care, three categories were identified which are discussed individually.

- Achieve patient goals as a strength
- Decrease length of stay as a strength and a result
- Patients' satisfaction as an aspiration and a result.

- **Achieve patient goals**

The ultimate goal for nursing care is to assist patients to reach their highest functional status with minimal risks and complications. If full recover of the patient is not possible, the patient must be helped to cope with his or her impaired or declining health. To know if patients' goals are obtained, goals firstly have to be set and specific nursing interventions have to be identified to reach these goals. The set goals have to be patient specific, realistic, measureable, and attainable and set in a time frame (Gulanick & Myers 2011:91,128). According to Gulanick and Myers (2011:6), patients recover faster

and have fewer complications if nurses set goals and work according to a plan. In this study the nurses' reflections related to patient care was obtained from the data gathered during the focus group interview.

<p><b><u>Nurses' reflections</u></b></p> <p><b><u>Patient care as a strength:</u></b></p> <ul style="list-style-type: none"> <li>▪ "...we [are] <i>achieving goals with our patient</i> [patients in selected CCU]..."</li> <li>▪ "...we <i>achieve positive results with our patient care</i>..."</li> <li>▪ "...we <i>save lives</i> ... not always, but we try our best..."</li> <li>▪ "...we <i>want to make the patients better</i>..."</li> </ul>
---

Patient needs and outcomes related to the AACN Synergy Model for Patient Care and the application in this study in the selected CCU are discussed in Chapter 2, Section 2.3.1, Section 2.4.1 and Section 2.5.

- **Decrease length of stay**

Williams et al (2010a:459) conducted a study in a CCU in Australia and found that the majority of patients passed away within the first ten days of admission in the CCU. They further found that there was no association between the patients' length of stay and the in-hospital mortality of patients; but there was a positive association between the patients' length of stay in the CCU and their mortality after discharge. The cost of caring is high when patients have lengthy hospital stays. The nurses' reflections on the patients' length of stay in the selected CCU revealed that the former perceived a decreased level of stay as a strength and, therefore, as a positive result.

<p><b><u>Nurses' reflections</u></b></p> <p><b><u>Decreased length of stay as a strength:</u></b></p> <ul style="list-style-type: none"> <li>▪ "...we [are] <i>getting our patients well out of ICU</i>..."</li> </ul> <p><b><u>Decreased length of stay a result in the CCU:</u></b></p> <ul style="list-style-type: none"> <li>▪ "...we <i>have to measure our discharge rate to the ward</i>..."</li> <li>▪ "...we <i>would like a progress discussion by the team of health professionals from admission in the emergency department to being discharged</i> ..."</li> <li>▪ "...we <i>want adverse events to become less</i>..."</li> </ul>
--

The length of stay of patients in the selected CCU is discussed in Chapter 4, Section 4.4.1.1.

- **Patient satisfaction**

According to Kupfer and Bond (2012:139), patient satisfaction is a measurement to determine how the service of a hospital meets or exceeds the anticipated expectations of the patients. Patient satisfaction surveys are, according to these authors, increasingly used to monitor quality of care. In the selected hospital the customer satisfaction survey is known as the ‘Voice of the Customer’. The ‘Voice of the Customer’ gives the patients the opportunity to rate the care they received from the hospital. The survey includes rating of the hospital’s main reception, ward facilities and ward nursing care, doctor’s care, specialist services, theatre care, catering and general facilities. The patients rate the care on a five-point Likert scale on a continuum from “Unacceptable” to “Excellent”. Additionally, the patients can make general comments and indicate whether they want management to contact them (see Annexure G.2). The nurses’ reflections show that they regarded patient satisfaction as an aspiration; it was their ambition that patient satisfaction would emerge as a direct result of their patient care.

-----

**Nurses’ reflections**

**Patient satisfaction as an aspiration:**

- “...we must have more patience with our patients...”
- “...we must protect our patients...be their advocate...”

**Patient satisfaction as a result of care:**

- “...patients’ positive feedback will attract other patients to the hospital...”
  - “...we will see appreciation in form of cake and letters of appreciation...”
- 

The patients’ satisfaction related to the AACN Synergy Model for Patient Care is discussed in Chapter 2, Section 2.4.1.

- **The nurse**

Based on the findings, competency and nurses' outcomes emerged as themes. The nurses regarded competency as one of their strengths and they aspired to be more competent. The theme, Nurses' outcomes, emerged from the nurses' reflections during the discussion of the results of a positive work environment.

- o **Theme 1: Nurses' competency**

Perrie (2006) states competence can be defined in many ways, but almost all definitions include knowledge. Not all nurses function on the same level; thus there is always the risk of a nurse or nurses acting in ignorance thereby putting positive patient outcomes at risk. The South African Qualification Authority (2012) underlines the need for highly skilled nurses with critical analytical thinking skills, problem solving skills and the ability to use evidence based information to evaluate the clinical practice of nurses to improve the quality of nursing care. The Nurse and Midwifery Council (2010) in the UK defines a lack of competence as a "lack of knowledge, skill or judgement of such a nature that the nurse or midwife is unfit to practice safely and effectively in any field in which they claimed to be qualified or seek to practice".

Regarding competency, the four categories listed below were identified and are discussed in detail.

- Skills and knowledge
- Values and attitudes
- Evidence-informed
- Vision.

- **Skills and knowledge**

Innocent (2011) emphasises that knowledge empowers nurses to act. However, the opposite is also true: a lack of knowledge leaves nurses powerless to provide safe and effective nursing care. According to Urden et al (2010:3), critical care nurses have to deliver quality care skilfully, holistically and have to use high technological monitoring systems to ensure optimal patient outcomes. The knowledge and skills of nurses is on

different levels and ranges on a continuum from “Novice” to “Expert” (Benner et al 1996:36). In the nurses’ reflections they regarded skills and knowledge as one of their strengths in the selected CCU. It was furthermore noticeable from their comments that they regarded skills and knowledge as something they wanted to be known for.

<p><b><u>Nurses’ reflections</u></b></p> <p><b><u>Skills and knowledge as a strength:</u></b></p> <ul style="list-style-type: none"> <li>▪ “...we [shift leaders] often see incompetence and then rather do the work ourselves...”</li> <li>▪ <b>Comment from physician:</b> “...this patient needs a ward touch...”</li> <li>▪ “...our nurses [nurses in selected CCU] when rotated to other CCUs make a difference ...”</li> </ul> <p><b><u>Skills and knowledge as an aspiration:</u></b></p> <ul style="list-style-type: none"> <li>▪ “...we must be part of continuous professional development...”</li> <li>▪ “...we must [be] aware of historical information...”</li> <li>▪ “...we are competent and focused and doctors trust us...”</li> <li>▪ “...we have to keep up to date...”</li> <li>▪ “...we achieve results and share our knowledge...”</li> </ul>	
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The skills and knowledge nurses needed to answer the patients’ needs for the purpose of this study are discussed in Chapter 5, Section 5.2 and 5.3.

- **Values and attitudes**

Sellman (2010:206) states patients anticipate that nurses will be honest and fair and they will not misuse their “relative position of power” in caring for the patient. According to Sellman (2010:205), a profession’s code reflects the core values of the professional group it is written for. The SANC (2004:17) stipulates the behaviour of nurses and midwives. Nurses and midwives must act in such a way that it protects the health status and well-being of the patients. They have to give special consideration to the vulnerable populations due to the latter’s health status, age, disability and social standing. The nurses and midwives have to ensure that patients are safe with regard to correct identification and the application of diagnostic and therapeutic interventions. In the nurses’ reflections it was evident that they regarded their values and attitudes as a strength and aspired to live up to the hospital group’s set of values. The selected hospital’s core values are trust, caring, dignity, passion and participation.

<p><b><u>Nurses' reflections</u></b></p> <p><b><u>Values an attitudes as a strength:</u></b></p> <ul style="list-style-type: none"> <li>▪ "...we must keep it a fun [positive] place..."</li> <li>▪ "...we have to own the values, respect and dignity, to live the values..."</li> </ul> <p><b><u>Values an attitudes as an aspiration:</u></b></p> <ul style="list-style-type: none"> <li>▪ "...we must be the best we are ..."</li> <li>▪ "...we must listen to the patient..."</li> <li>▪ "...working as a team increase[s] our level of caring..."</li> <li>▪ "...we like our patients to smile..."</li> <li>▪ "...negative things influence our performance..."</li> </ul>
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- **Evidence-informed**

Clinical effectiveness and evidence-based practice refers to the use of research findings to be updated in clinical practice and clinical decision making and to ensure the best care always (McSherry, Simmons & Abbott 2002:7). Clinical effectiveness is built on evidence-based practice as confirmed by Regan (1998:244). According to Long and Harrison (1996:10), current research practice must form the basis for clinical decision making. Cullum, DiCenso and Ciliska (1998:38) stipulate the nurses' needs to practice evidence-informed nursing. These needs specify that nurses must be clinical experts, must have knowledge of research findings, have an understanding of patient preferences in an environment with adequate resources and conducive in supporting the critical practitioner. The nurses in this study reflected that they aspired towards practice that is evidence-informed.

<p><b><u>Nurses' reflections</u></b></p> <p><b><u>Evidence-informed practice as an aspiration:</u></b></p> <ul style="list-style-type: none"> <li>▪ "...we have to keep us [ourselves] up to date..."</li> <li>▪ "...we must do Best Care Always [BCA]..."</li> <li>▪ "...keep ourselves updated with the newest research..."</li> </ul>
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Evidence-informed practice for the purpose of this study is discussed in Chapter 4, Section 4.4.1.3 and in Chapter 5, Section 5.3.1.5, Section 5.3.1.6 and Section 5.3.1.7.

- **Vision**

Loveridge and Cummings (1996:410) define a vision as “a mental image created by one’s imagination of what is going to happen”. Loveridge and Cummings (1996:410) view a vision as a “mental journey” from the existing state to the desired state; from the “known to the unknown” into the future.

The mission statement of the hospital groups clearly reflects its aspirations (Hospital mission statement of 2012).

- *“Become a global, integrated health care organisation.”*
- *“Develop and implement successful solutions to provide quality an affordable health care to the people of South Africa and globally by inspiring our people, creating new health care horizons and delivering value to all stakeholders.”*
- *“Be a leading corporate citizen, proud of our heritage and what we contribute to society.”*

### **The nurses aspired and envisioned the CCU to be a ‘Unit of Excellence’**

- **The environment**

Based on the findings, the environment emerged as a broad central theme and nurses regarded the environment as a **strength**, an **opportunity** and a **result**.

- o **Theme: Environment**

Urden et al (2010:1) describe the critical care environment as “an ever-changing” and challenging environment. According to Kaplow and Hardin (2007:15), cultivating a healing environment in a CCU improves the patients’ healing experience and promotes patients’ as well as the families’ satisfaction which, in turn, leads to better patient outcomes. The fact is that the nurses’ attitudes towards their work, their colleagues, and their patients can influence the overall environment in the CCU and can change a toxic environment to a healing environment or vice versa (Almost 2006:444).



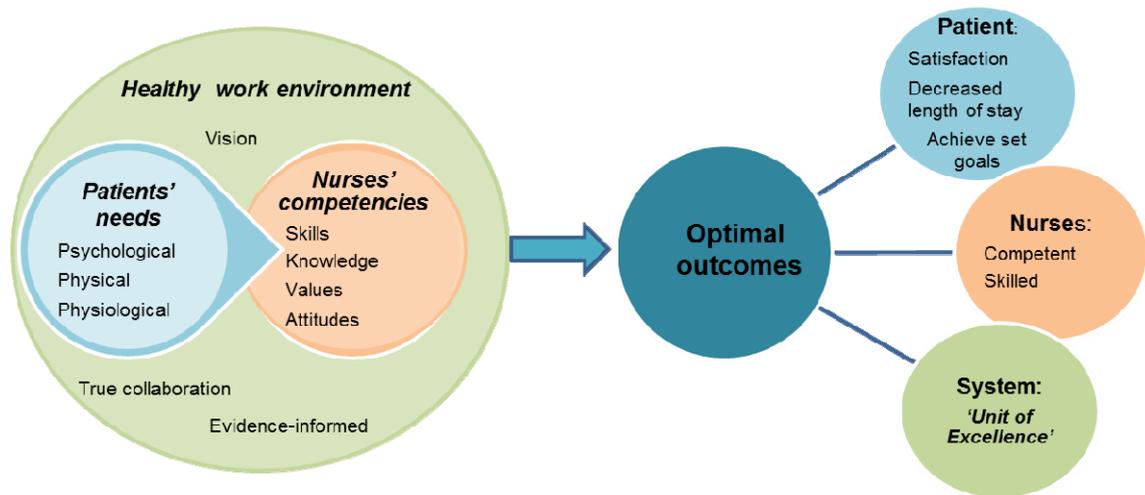
*needs, keeping the employees positive and empowered and continually improving current activities in the work place...”*

The AACN (2012) regards excellence in healthcare as the sum of many complex parts; it also recognises individual units when distinguishing themselves by improving every aspect of patient care. To be rewarded by the AACN for excellence, healthcare organisations have to demonstrate and show evidence of leadership structures and systems, appropriate staffing and staff engagements, effective communication, and best practice.

The hospital group concerned with in this study did not have a formal award related to AACN's criteria. The nurses and the researcher aspired towards being a **'Unit of Excellence'** through a collaborative approach towards enhancing synergy between the patients' needs, the nurses' competencies and the characteristics of the environment in the CCU in a selected hospital in Gauteng.

### **6.3.2 Application of the AACN Synergy Model for Patient Care in this study**

After the analysis of the focus group data, the researcher adopted and adapted the AACN Synergy Model for Patient Care related to the nurses' reflections and made it authentic to the CCU. In the adopted and adapted model, the patients' needs (psychological, physical and physiological) will drive the nurses to answer the patients' needs with skills, knowledge, values and attitudes. The healthy work environment in which the nurses will have a vision will, with true collaboration and evidence-informed practice, be conducive to answer the patients' needs and nurture the professional environment for nurses. The synergy between the patient, the nurse and the environment will result in optimal outcomes. These outcomes will relate to the patient, the nurse and the environment. The patients will be satisfied, their set goals will be achieved and they will have a decrease in their length of stay. The nurses will be skilled and competent, and the system/environment will be known as a **'Unit of Excellence'**. Figure 6.3 shows the adopted and adapted AACN Synergy Model for Patient Care.



**Figure 6.3: The adopted and adapted AACN Synergy Model for Patient Care for the purpose of this study**

### 6.3.3 The action plan

The three key drivers confirmed the data analysis and helped to formulate and finalise the action plan (Holloway & Wheeler 2010:241). In formulating the plan the researcher and the nurses had to set priorities and define tasks to be done. When the priorities had been set, each issue had to be addressed bearing in mind its goal, objectives, steps and responsible persons, timeline and resources needed (Holloway & Wheeler 2010:241).

The goal of the action plan was apparent in the vision the nurses had set for themselves: they envisioned to be acknowledged as a **'Unit of Excellence'** and to not only be the best in the selected hospital, but also to be the best in the hospital group. To reach these goals two main objectives were set. The **first objective** was to develop the nurses' competencies and the **second objective** was to take responsibility to create a work environment conducive to answer the patients' needs and to nurture the professional environment for nurses.

- **Objective 1: Develop nurses' competencies**

It was possible for the researcher, in her dual role as researcher and clinical facilitator, to spend time in the CCU with the nurses on a daily basis. In order to develop the nurses' competencies, consensus was reached among the researcher and the three key drivers on the following initiatives:

- o enhance competencies through in-service training
- o create and maintain a '**Journey to Excellence**' file
- o obtain valid international accredited basic life support (BLS)

**In-service training** focused on the competencies nurses had not been competent in. The training would be conducted on a daily basis for only 10 minutes per day. The rationale for the short sessions was that the nurses felt that since the CCU environment was dynamic, complex, vulnerable, stressful, high-tech and fast-paced (Ericksen 2004:22; Good 2009:3; Tigert & Spence 2004:19), time was too limited for long presentations. The researcher and nurses reached consensus that scheduled or unscheduled one-to-one discussions between the researcher and the nurses would be appreciated. The nurses agreed to make appointments with the researcher to address their specific needs during the one-to-one discussions.

One of the intensivist physicians became involved in the CCU and volunteered training related to patient risks and the acuity scoring of patients. He was available at 14:00 in the afternoons.

A '**Journey to Excellence**' file would be kept by the nurses to keep record of the in-service training they received and to compile their own portfolio of evidence to be used in their quarterly performance appraisal. The researcher would guide the nurses on the keeping of their individual files. The researcher would further help the deputy nursing service manager to establish levels of competencies for the nurses that ranged from "Novice" to "Expert". The levels of competency are discussed in Chapter 5, Section 5.2.3 and the nurses are categorised in Table 5.4. The nurses would use their portfolio of evidence as proof that they were competent and could be promoted to the next level of competency. Their focus would be on evidence-informed practice, that is, the implementation of BCA related to the prevention of VAP, CLABSI, and CAUTI. The nurses also committed themselves to improve their communication with the patients and the family members.

Of the 18 nurses, only three (16%) had a valid international accredited basic life support certificate. The certificates, obtained once the nurse had successfully completed the courses, were valid for two years (AHA 2012). According to the hospital policy, all the healthcare providers in the selected hospital had to have a valid basic life support

certificate. The nurses and the researcher reached consensus that the researcher would assist them with the bookings of the basic life support course at the clinical department as the selected hospital did their own American Heart Association's basic life support training. Nurses working in the CCU are frequently confronted with patients presenting with cardiac and/or pulmonary arrests. To be a competent nurse requires that one has the necessary knowledge and skills required to manage these life-threatening events; it is therefore required from nurses to attend the basic life support and advanced life support courses which are international accredited courses. Wiese, Wilke, Bahr and Graf (2008:1) support the attendance of the accredited courses and emphasise that the repetition of life support courses is essential for enhancing cardiac-pulmonary resuscitation skills. The basic Life Support certificate is a pre-requisite to enrol for the advanced Cardiac Life Support and is available from the American Heart Association (AHA 2012). The hospital where this study was conducted is a registered cardio-pulmonary resuscitation centre for the American Heart Association basic life support courses. The basic life support course is presented by three basic life support instructors.

The nurses reached consensus that every nurse in the CCU should have a valid basic life support certificate and that the shift leaders should have an opportunity to attend and obtain their advanced cardiac life support certificate. Three nurses were scheduled for basic life support training on 11 January 2012 and two nurses were scheduled for basic life support training on 23 February 2012. Five of the shift leaders were scheduled for advanced cardiac life support training during April 2012. The aim of the nurses was that all the nurses would have a valid basic life support certificate by 31 December 2012 and all the shift leaders a valid advanced cardiac life support certificate by April 2013.

According to the selected hospital's policy, shift leaders were preferred to be in possession of an international accredited advanced cardiac life support certificate. The advanced cardiac life support certificate is also valid for only two years (AHA 2012). The training department also managed the selected hospital's bookings for the advanced cardiac life support course.

- **Objective 2: Taking responsibility to create a healthy work environment**

The nurses and researcher adopted and adapted the six standards of the AACN healthy work environment to guide them in the creation of a healthy work environment.

- **Authentic leadership**

**Objective 1:** To appoint an acting unit manager

**Objective 2:** To re-allocate ownership for duties in the CCU

The key drivers voiced their opinions and concerns about the CCU having been without a unit manager, an authentic leader to support and guide them, since April 2011. Their biggest complaint was the discontinuity of care and the fact that there was no person to take responsibility to address the complaints of patients, families and doctors. The deputy nursing service manager managed the complaints, but was not continuously present in the CCU as she had two other CCUs as well as two high care units to manage. The researcher took the responsibility to engage in talks with the management to appoint an acting unit manager.

There were duties to be done and the key drivers asked for the re-implementation of these 'ownership duties' that included health and safety, infection control, a touch team, equipment, fridge, in-service training, quality, mock resuscitation, incidents, drugs and books, off duties, BCA, audits, hands-on and to be fanatical about detail. The ownership list would be available on the noticeboard in the previous unit manager's office and the nurses could choose an ownership of their choice (see Annexure J.1 on CD).

- **Skilled communication**

**Objective:** To attend a conflict management course

The researcher and the nurses acknowledged the importance of communication skills and undertook to contact the training department for scheduled courses in conflict management. As clinical facilitator the researcher liaised with the training department to obtain the information with regard to the conflict management course. Furthermore, as a team the nurses would focus on good relationships in the CCU.

- **True collaboration**

**Objective:** To establish a unit culture of true collaboration

The CCU used to have a 'buddy system' where nurses were allocated to a 'buddy' that would help him or her during his or her daily or nightly duties. These 'buddies' also relieved each other during tea and lunch breaks. The key drivers wanted the 'buddy system' to be re-implemented as the 'buddy system' promotes team work.

The key drivers and the researcher reached consensus to put up a '*Welcome to ward* ■' banner at the entrance of the CCU. The researcher came across "office graffiti" used by Google Office (Office Graffiti 2006) and suggested that this was something that could be utilised to create a positive culture in the CCU. The key drivers and the researcher also agreed that they should create a '***Graffiti for Synergy Wall***' which would enable them to "*visualise the positive involvements of the patients, families and the nurses*" and give the CCU "*personality*". The wall at the back entrance of the CCU was identified to be the best option and the researcher would take responsibility to liaise with the deputy nursing service manager and management on whether the creation of a '***Graffiti for Synergy Wall***' was possible.

- **Effective decision making**

**Objective:** To appoint an acting unit manager

The key drivers felt that it was essential to appoint a person as acting unit manager to ensure continuity of care.

- **Appropriate staffing**

**Objective:** To develop nurses' competencies as discussed in Objective 1 of the action plan.

- **Meaningful recognition**

**Objective:** To nominate nurses for the hospital's recognition system

The selected hospital had two recognition initiatives. One was that the unit manager (the deputy nursing service manager in absence of the unit manager) rewarded the nurses on her discretion with a voucher. The voucher entails monetary benefits nurses could use. The second was a hospital group initiative where the nurses nominated nurses who 'walked the extra mile' for the '**Carer of the Month**'. The nominators had to submit proof of evidence why a specific nurse was nominated. From these nominations a nurse from the CCU in the selected hospital in Gauteng stood a chance of receiving the '**Carer of Year**' award at the hospital group's national '**Night of the Stars**' function. The nurses undertook to encourage nominations for both of these initiatives. A sealed '**Carer of the Month**' box would be provided at the nurses' bay where the nurses could deposit the nominees' names. The acting unit manager would open the box every month and would submit the nominees to the deputy unit manager for recognition.

The nurses and the researcher reached consensus that the work environment would be re-assessed from 2 July 2012 to 31 July 2012 to determine progress in the work environment over the period of 7 November 2011 to 30 June 2012.

Table 6.7 summarised the action plan. The objective is stated in the first column, the second column indicates the initiative with the person responsible in the fourth column and the planned timeframe in the fifth column.

**TABLE 6.7: SUMMARY OF THE ACTION PLAN**

OBJECTIVE 1	INITIATIVES	PERSON RESPONSIBLE	TIMEFRAME
Develop nurses' competencies	a. <b>In-service training</b> - 10 min sessions at 11:00, 19:30 and 05:30 on assessments not found competent yet (Graph 6.1) b. Create a ' <b>Journey to Excellence</b> ' file for nurses to compile <b>their own portfolio of evidence (See page 376)</b> c. Establish level of competencies from "Novice" to "Expert". d. Daily reminders of implementation of BCA (prevention of VAP, CLABSI, and CAUTI) e. Schedule nurses for an international accredited basic life support training f. Schedule shift leaders for an international accredited advanced cardiac support training	<ul style="list-style-type: none"> <li>• Researcher</li> <li>• Shift leaders</li> <li>• Approved volunteers (Nurses)</li> </ul>	Six months: <i>(7 Nov 2011 to 30 June 2012)</i>  Review: 28 - 30 December 2011
OBJECTIVE 2	IINIATIVES	PERSON RESPONSIBLE	TIMEFRAME
Create a healthy work environment	1. <b>Authentic leadership</b> a. Negotiate for an acting unit manager b. Re-implement ownership list 2. <b>Skilled communication</b> a. Schedule for conflict management course b. Focus on good relationships 3. <b>True collaboration: establish unit culture</b> a. Re-Implement 'buddy system' b. Create a ' <b>Graffiti for Synergy Wall</b> ' where all the successes related to the patients, families, nurses and environment are displayed 4. <b>Effective decision making</b> a. To appoint an acting unit manager 5. <b>Appropriate staffing</b> a. Develop competencies 6. <b>Meaningful recognition</b> a. Activate existing reward systems 7. <b>Re-assess characteristics of the environment by utilising the AACN healthy work environment assessment tool</b>	<ul style="list-style-type: none"> <li>•Researcher</li> <li>•Nurses</li> <li>Training department</li> <li>•Nurses</li> <li>•Everyone involved in the CCU</li> <li>Deputy nursing service manager</li> <li>•Researcher</li> <li>•Deputy nursing service manager</li> <li>•Nurses</li> <li>•Researcher</li> <li>Deputy nursing service manager</li> <li>•Nurses</li> <li>•Researcher</li> </ul>	Six months: <i>(7 Nov 2011 to 30 June 2012)</i>

### 6.3.4 Activate implementation of planned actions in the CCU

On 7 November 2011 the selected CCU embarked on their journey towards enhancing synergy in the CCU. It began with a meeting in the CCU at seven o'clock in the morning. The researcher, hospital manager, the chief nursing service manager, the

deputy nursing service manager, a physician and the nurses working in the CCU attended the meeting. The purpose of the meeting was to delineate the role of the physician – who volunteered to join the group on their journey – and the roles of the researcher and the nurses. The physician explained how he would be involved to help the CCU from the ‘doctors’ side’ to improve quality in the CCU. The researcher summarised the way forward with the nurses as had been previously decided (during the focus group held on 13 October 2011). One of the nurses voiced her feelings towards the hospital manager and nursing service manager about the nurses in the CCU being ‘left on their own’ and expressed appreciation on behalf of the selected CCU to the management for their effort and support.

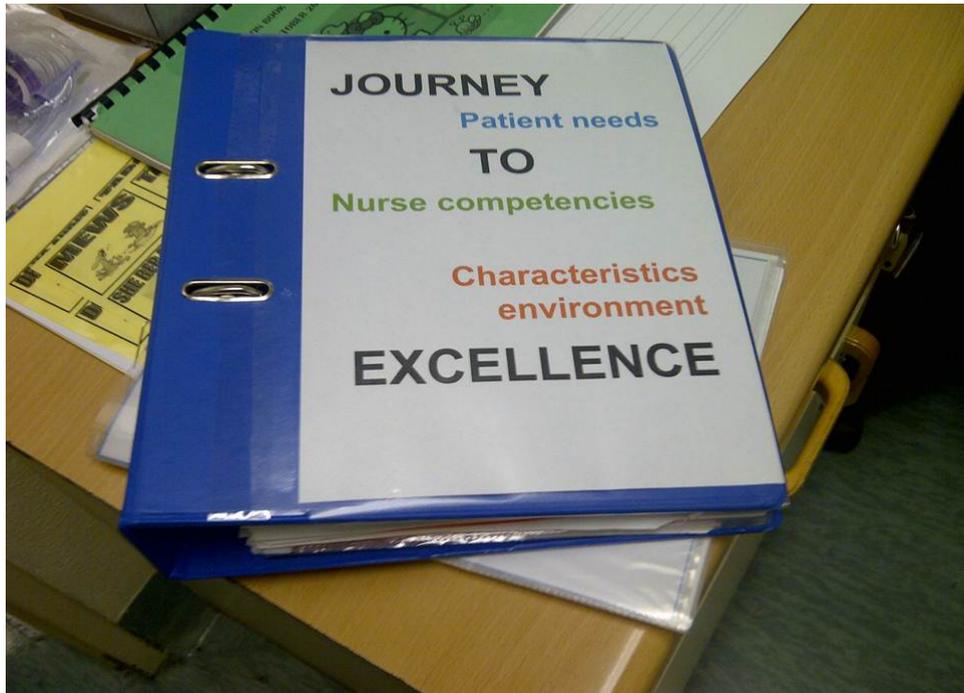
The planned actions as delineated in Table 6.7 are discussed next.

- **Nurse competencies**

The actions implemented related to develop nurse competencies are attended to first.

- **In-service training**

The in-service training programme was initiated on 8 November 2012 and involved 10 minute in-service training sessions for both day and night staff. It further entailed the starting of one file, referred to as the ‘**Journey to Excellence**’. The ‘**Journey of Excellence**’ file is shown in Photograph 6.1.



**Photograph 6.1:** 'Journey to Excellence' file

The in-service training was started on 8 November 2011. A summary is provided in Table 6.8 on the topics presented and the number of nurses that attended. There were days that the 10-minute sessions could not be realised as the nurses were too busy. (These are highlighted in red in Table 6.8). In these instances the clinical facilitator used the opportunity to do on-the-spot teaching which is also indicated in Table 6.8. A week after in-service training was initiated, the nurses already reported that they “*enjoy[ed]*” the in-service training and they felt “*stimulated to learn more*” and “*realise[d] the importance thereof*”. The night staff commented what they “*prefer[red]*”. It was however, logistically difficult for the clinical facilitator to present in-service training every evening as she had a full-time day position in the hospital. The researcher and the nurses reached consensus to change the in-service training sessions: the researcher would be responsible for the in-service training of the night staff once a week on an evening that was convenient for the researcher. The nurses and the researcher reached consensus that the researcher would make a telephone call before she left home to ensure that the nurses took time for in-service training into consideration when they planned their nightly activities and patient care. The shift leaders working night shift took the responsibility to do on-the-spot teaching at night. The researcher encouraged the nurses to participate in the in-service training. Subsequently, two nurses volunteered to take the responsibility and to lead some of the 10-minute training sessions.

The researcher prepared a file in which each nurse's '**Journey to Excellence**' had to be recorded. The nurses could use the file as evidence of continuous professional development and it could be presented when they wanted to be evaluated for promotion to a higher level of competency.

The physician volunteered to help with the in-service training and thus contribute to the enhancement of synergy in the CCU. He was available at 14:00 for training. The researcher did not attend the sessions presented by the physician. When she enquired about the sessions the reflections of nurses were positive.

The nurses were booked to attend training for the BLS courses and shift leaders were booked for advanced cardiac life support courses which would both be presented in 2012.

**TABLE 6.8: SUMMARY OF THE 10 MINUTE IN-SERVICE TRAINING DONE  
(7 NOVEMBER TO 15 DECEMBER 2011)**

DATE/TIME	TOPIC	NUMBER ATTENDED	PRESENTER
8 November 2011: 11:00 & 5:30	Peripheral saturation monitoring in relation to haemoglobin	8 (only day session materialised)	<ul style="list-style-type: none"> <li>Researcher</li> </ul>
9 November 2011: 11:00 & 05:30	Group discussion : <ul style="list-style-type: none"> <li>Duties allocated on a daily basis (<i>e.g. check the emergency trolley</i>)</li> <li>'Buddy systems'</li> <li>'Bare below elbows' principle</li> </ul>	6 (only day session materialised)	<ul style="list-style-type: none"> <li>Researcher</li> <li>Volunteer nurse</li> </ul>
10 November 2011 11:00 & 05:30	Interpretation of an arterial blood gas specifically related to: <ul style="list-style-type: none"> <li>base excess</li> <li>HCO<sub>3</sub> (<i>standard and actual</i>)</li> </ul>	6 (Unit busy, only 4 nurses <b>attended day</b> and only 2 nurses at night)	<ul style="list-style-type: none"> <li>Researcher</li> </ul>
11 November 2011 11:00 & 05:30	Interpretation of an arterial blood gas specifically related to: <ul style="list-style-type: none"> <li>base excess</li> <li>HCO<sub>3</sub> (<i>standard and actual</i>)</li> </ul>	11	<ul style="list-style-type: none"> <li>Researcher</li> </ul>
14 November 2011 11:00 & 19:30	Group discussion : <ul style="list-style-type: none"> <li>Duties allocated on a daily basis (<i>e.g. check the emergency trolley</i>)</li> </ul>	11	<ul style="list-style-type: none"> <li>Researcher</li> </ul>

DATE/TIME	TOPIC	NUMBER ATTENDED	PRESENTER
	<ul style="list-style-type: none"> <li>• 'Buddy systems'</li> <li>• 'Bare below elbows' principle</li> </ul>		
15 November 2011 11:00	Mechanical ventilation	Unit busy - <b>did not materialise</b>	
16 November 2011 11:00 & 19:30	Tidal volume ( <i>pressure ventilation</i> )	Unit busy - <b>did not materialise</b>	
17 November 11:00 & 19:30	Mechanical ventilator settings for patients presenting with acute respiratory distress	Unit busy - <b>did not materialise</b>	
18 November 2011 11:00 & 19:30	Prevention of ventilated associated pneumonia (VAP)	4 (Day) <b>did not materialise</b> night – unit busy	<ul style="list-style-type: none"> <li>• Researcher</li> </ul>
21 November 2011 11:00 & 05:30	Nursing care of a mechanically ventilated patient	7	<ul style="list-style-type: none"> <li>• Researcher</li> </ul>
21 November 2011 19:30	Chest radiography interpretation ( <i>determining the quality</i> )	2	<ul style="list-style-type: none"> <li>• Researcher</li> </ul>
22 November 2011 11:00 & 19:30	Prevention of CLABSI	<b>4 (Day)</b> <b>Did not materialise</b> night – unit busy	<ul style="list-style-type: none"> <li>• Researcher</li> </ul>
23 November 2011 11:00 & 19:30	Prevention of CLABSI. Nursing care of patient admitted following a cerebrovascular incident ( <i>Patient admitted the previous day</i> )	Could not materialise unit busy – changed to 1:1 discussion	<ul style="list-style-type: none"> <li>• Researcher</li> </ul>
24 November 2011 11:00 & 05:30	Waveform confirmation on a Vigileo	4	<ul style="list-style-type: none"> <li>• Researcher</li> </ul>
25 November 2011 11:00 & 19:30	Arterial blood gas analysis <ul style="list-style-type: none"> <li>• oxygenation status</li> <li>• ventilation status</li> </ul>	Could not <b>materialise - unit busy</b>	<ul style="list-style-type: none"> <li>• Volunteer nurse</li> </ul>
28 November 2011 11:00	Group discussion : <ul style="list-style-type: none"> <li>• Duties allocated on a daily basis (<i>e.g. check the emergency trolley</i>)</li> <li>• 'Buddy systems'</li> <li>• 'Bare below elbows' principle</li> </ul>	6	<ul style="list-style-type: none"> <li>• Researcher/Nurses</li> </ul>
29 November 2011 11:00	Group discussion : <ul style="list-style-type: none"> <li>• Duties allocated on a daily basis (<i>e.g. check the</i></li> </ul>	6	<ul style="list-style-type: none"> <li>• Researcher/Nurses</li> </ul>

DATE/TIME	TOPIC	NUMBER ATTENDED	PRESENTER
	<i>emergency trolley</i> <ul style="list-style-type: none"> <li>• 'Buddy systems'</li> <li>• 'Bare below elbows' principle</li> </ul>		
30 November 2011 05:30 11:00	Group discussion : <ul style="list-style-type: none"> <li>• Duties allocated on a daily basis (<i>e.g. check the emergency trolley</i>)</li> <li>• 'Buddy systems'</li> <li>• 'Bare below elbows' principle</li> </ul>	10	<ul style="list-style-type: none"> <li>• Researcher /Nurses</li> </ul>
1 December 2011 11:00	Arterial blood gas analysis <ul style="list-style-type: none"> <li>• oxygenation status</li> <li>• ventilation status</li> </ul>	Could not materialise - unit busy	<ul style="list-style-type: none"> <li>• Volunteer nurse</li> </ul>
2 December 2011 14:00	Patient history <ul style="list-style-type: none"> <li>• Co-morbidities</li> </ul>	6	<ul style="list-style-type: none"> <li>• Physician</li> </ul>
5 December 2011 11:00	Chest radiography interpretation ( <i>determining the quality</i> )	4	<ul style="list-style-type: none"> <li>• Researcher</li> </ul>
<b><u>5 December 2011</u></b> <b><u>19:30</u></b>	Chest radiography ( <i>mediastinum width and cardiac-thorax ratio</i> )		
6 December 2011 14:00	APACHE score	7	<ul style="list-style-type: none"> <li>• Physician</li> </ul>
7 December 11:00	Central venous pressure monitoring <i>(level and zero of the transducer)</i>	Did not materialise - unit busy	<ul style="list-style-type: none"> <li>• Volunteer nurse</li> </ul>
8 December 2011 11:00	Arterial waveform identification	6	<ul style="list-style-type: none"> <li>• Researcher</li> </ul>
12 December 2011 11:00	Discussion: <ul style="list-style-type: none"> <li>• Mutual respect nurses and doctors</li> </ul>	8	<ul style="list-style-type: none"> <li>• Researcher</li> </ul>
13 December 11:00	Repeat lecture waveform confirmation Vigileo	4	<ul style="list-style-type: none"> <li>• Researcher</li> </ul>
14 December 2011 14:00	Patient acuties	8	<ul style="list-style-type: none"> <li>• Physician</li> </ul>
<b><u>14 December 2011</u></b> <b><u>19:30</u></b>	Arterial blood gas analysis: <ul style="list-style-type: none"> <li>• oxygenation status</li> <li>• ventilation status</li> </ul> Monitoring of a sick child	Did not materialise - unit busy  <b><u>Continued 1:1 discussions</u></b>	<ul style="list-style-type: none"> <li>• Researcher</li> </ul>

DATE/TIME	TOPIC	NUMBER ATTENDED	PRESENTER
15 December 2011 11:00 & 5:30	Reflected on value of the 10-minute session and reached consensus that the “busy” unit and unplanned admissions and unstable patients made implementation difficult	14	<ul style="list-style-type: none"> <li>• Researcher</li> </ul>

- **Healthy work environment**

Following, the actions implemented to create a healthy work environment are discussed.

- **Authentic leadership**

The researcher and the three key drivers discussed the urgency of appointing an acting unit manager. One of the key drivers was convinced by the researcher and the other two key drivers to act as the unit manager if approval was given by the management. An appointment was made with management to request the appointment of an acting unit manager. The physician supported the researcher and the key drivers in this regard. Although the request was not approved by management, they did approve for the key driver to work four days a week from 7am to 7pm supernumerary to ensure continuity of care and be the contact person in the CCU. The authority, however, remained with the deputy nursing service manager. The multidisciplinary team was informed about the decision, and the nurses, physicians and surgeons working in the CCU assured the specific key driver of their support. The appointed key driver verbalised her feelings of self-doubt and lack of confidence, but the researcher and the two key drivers re-assured her of their support.

The ownership list was posted on the noticeboard in the previous unit manager’s office. The nurses could choose an ownership of their choice and could give their inputs specifically related to what was expected of the nurse when performing the additional duty (see Annexure J.1). The deputy nursing service manager was also invited by email to give her input concerning the ownership list (see Annexure J.2).

**Note:**

From this point, the appointed key driver would be referred to as the nurse-in-charge.

- **Skilled communication**

A conflict management course was scheduled at the hospital group's Training and Education College in August 2012 and it was agreed that the nurses would book themselves for the course. The nurse-in-charge hung a 'Welcome to ward ■' banner above the entrance to the unit to welcome all visitors and staff to the CCU (See Photograph 6.2).



**Photograph 6.2: Welcome banner in the selected CCU**

- **True collaboration**

To ensure that the patients were under continuous supervision and create a culture in the CCU of helping and supporting each other, the 'buddy system' was re-implemented. At the beginning of each shift the nurses were allocated to a 'buddy' for the day or night. The nurses would stand in for each other during tea, lunch and smoke breaks. The allocated 'buddies' would also assist each other with tasks such as bathing, turning, and suctioning the critically ill patient. The shift leader encouraged the 'buddy system' on a

daily basis and monitored whether nurses did 'buddy' (work together, support and help) at the beginning of and during each shift. The nurses provided feedback on the realisation of the 'buddy system' during monthly CCU meetings. At these meetings the nurses were given an opportunity to reflect on and make suggestions to improve the 'buddy system'.

The researcher and the deputy nursing service manager had a discussion about the 'Graffiti Wall' and the researcher had to discuss it with the hospital manager. The hospital manager approved the request for the '**Graffiti for Synergy Wall**' and the hospital manager would arrange it with the workshop.

- **Effective decision making**

The objective for effective decision making was to appoint an acting unit manager. Refer to Authentic leadership, Section 6.2.3.2, for a discussion on this point.

- **Appropriate staffing**

The objective for appropriate staffing was to develop nurses' competencies. Refer to In-service training, Section 6.2.3.2, for the discussion on this objective.

- **Meaningful recognition**

One of the shift leaders took the responsibility to make the '**Carer of the Month**' box in which nurses could place the names of the nominees whom they voted for as '**Carer of the Month**'. The researcher reminded her several times and asked whether she needed assistance but she replied that it would be done.

### **6.3.5 Review the action plan**

Between 28 and 30 December 2011 the nurses were asked by the researcher during informal group discussions to reflect on their best experiences over the previous months in the CCU. An open-ended question was asked and the nurses wrote down their individual experiences. The reflections of the nurses in the selected CCU showed that

they were on their journey towards enhancing synergy in the selected CCU as indicated below.

- *“...washed her [patient’s] hair...then did proper mouth care and changed a small non-invasive mask to a full face mask...this made my patient feel better...and I felt very good inside...I understand what I now do...”*
- *“...best patient care...this is what we now focus on...it gives us pride...”*
- *“...we must still focus on respect and patients dignity as human beings...”*
- *“...to address the patient needs we have to understand their condition and treatment...”*
- *“...I now know how to read a chest X-ray for the first time...I understand it...”*
- *“...I gained confidence in myself about my work and acquired knowledge that will be with me for all my life...”*
- *“...I am now stimulated...I want to know more to be able to care best for my patients...”*
- *“...I feel more motivated...”*
- *“...It is much more pleasant atmosphere in the unit [CCU]...”*

The nurses definitely experienced a more positive atmosphere in the selected CCU. This positive experience was confirmed in a letter that a physician, who was on call in the selected CCU during December 2011, wrote to the hospital manager stating that:

*“...Dit was redelik druk by tye op spoed, maar daar was met enkele klein uitsonderings nooit enige probleme met opname en behandeling van kritiek siek pasiënte nie. In 8 jaar van Desemberdiens het ek een van die beste feesgetye ooit beleef as internis by die hospitaal, en derhalwe voel ek genoop om dit onder u aandag te bring... (“It was very busy on call, but with just a few exceptions there was never any problem with the admissions or the caring of the critically ill patients...Therefore I [the physician] would like to inform you [the hospital manager] that my on-call duty this recent December festive season was the best experience ever during the past eight years...” (see Annexure I.2).*

- **The in-service training**

The physician and the three key drivers (one became the nurse-in-charge) held a meeting and reflected on the in-service training being done (Refer to summary in Table 6.8). Although the in-service training created a positive learning environment in the CCU, it became apparent that there were some obstacles. Firstly, it took a lot of the researcher’s time and, secondly, only 37% of the planned 10-minute sessions

materialised. The changing of shifts, the unpredictable critical care environment, and nurses on annual and maternity leave made the inclusion of all the nurses in the in-service training difficult. There was no critical care trained nurses permanently on night duty in the selected unit and the researcher had to do all the in-service training at night or early mornings. The hours the researcher had to work to accommodate day and night staff were not sustainable on the long term and the key drivers and the researcher reached consensus that the way the in-service training was done had to change. The physician also stopped with the 10-minute sessions he did at 14h00 also due to the unpredictable critical care environment (emergency admissions, and haemodynamic unstable patients) and the discontinuity of the nurses. The researcher, the key drivers and the physician agreed on the decision to categorise the in-service training as follows: patient rounds, product specialist, on-the-spot teaching and an individualised continuous professional developing programme for all the nurses.

- **Patient rounds**

The patient rounds were planned for every second Monday morning from 07:00 to 08:00 and would be led by the physician. The purpose of the patient rounds was to discuss the patients' hospital journey: starting from admission and ending with her or his current status. These rounds would include the newest evidence-informed practice and the researcher would invite the multidisciplinary team which included the dieticians, physiotherapists, pharmacists, case managers, infection control nurse, the health and safety nurse and the nurses of all the CCUs in the hospital.

- **Product specialist**

The product specialist who was knowledgeable about the products and equipment used in the CCU would be allowed to give training to the nurses in the CCU and it would be recorded as such in the '**Journey to Excellence**' file.

- **On-the-spot teaching**

Any shift leader, physician as well as the researcher who gave on-the-spot teaching had to record it in the allocated place in the '**Journey to Excellence**' file.

- **The continuous professional development programme (CPD)**

All the nurses would be invited to take part in this CPD programme. Four nurses handed in their resignations for 31 December 2011 and new nurses were appointed. The CPD programme would be driven by the researcher but the nurses would take responsibility for their own development as the management would use the progress of the nurses in the programme as part of their performance appraisal.

- **Meaningful recognition**

By the end of November 2011 the '**Carer of the Month**' box had not been made yet and the shift leader responsible for it went on maternity leave. The researcher made the box and reminded the nurses of the decision to vote for the '**Carer of the Month**'. Disappointingly, when the nurse-in-charge opened the box at the end of December 2011 nobody had voted for a '**Carer of the Month**'. The key drivers said they would keep on reminding the nurses to vote for the 'Carer of the Month'.

## **6.4 Cycle 5: ACTIVATE IMPLEMENTATION OF REVIEWED ACTIONS IN THE CCU AND REASSESS THE WORKING ENVIRONMENT**

### **6.4.1 Timeframe**

**Cycle 5:** Towards synergy commenced on 28 December 2011 and was based on the findings obtained from the nurses' reflections on their experience in the CCU over the previous months and the meeting between the researcher, physician, and the key drivers. The implementation of the reviewed plan was planned from 2 January 2012 to 30 June 2012 with a re-assessment of the environment planned for 2 July 2012 to 31 July 2012. Table 6.9 summarises the timeframe and objectives of Cycle 5 which comprised of the three stages of **LOOK**, **THINK** and **ACT** as advised by Stringer (2007:128).

**TABLE 6.9: Cycle 5: TOWARDS SYNERGY**

LOOK	THINK	ACT
<u>Date:</u> 28 to 30 December 2011	<u>Date:</u> 28 to 30 December 2011	<u>Date:</u> 2 January to 31 July 2012
<u>Objective:</u> 1. Review the action plan (refer to Section 6.3.5)	<u>Objective:</u> 1. Reflect on the implementation of the action plan (refer to Section 6.3.5)	<u>Objectives:</u> 1. Activate implementation of the reviewed actions in the CCU (refer to Section 6.5) 2. Re-assess the working environment (refer 2 Section 6.5.1)

#### 6.4.2 Cycle 5: LOOK at and THINK about the action plan

The **LOOK** and **THINK** of **Cycle 5** was intertwined with **Cycle 4: Step 9** when the action plan was reviewed. (refer to Section 6.2.3.3).

#### 6.5 Cycle 5: ACT: IMPLEMENT THE REVIEWED PLAN

The reviewed plan included the beginning of a continuous professional development programme and the beginning of patient rounds.

- **Continuous professional development programme**

The programme commenced in March 2012 (see Annexure K.2 on CD for the planned programme for 2012) to re-enforce existing knowledge and to ensure the nurses were updated with the newest and most recent evidence-informed practice. The **continuous professional development programme** was developed on three levels: Level 1 was for the novices who had just started working in the CCU; Level 2 was for the advanced beginners who had worked in the CCU for less than a year. If the advanced beginner thought he or she was sufficiently competent, she or he could challenge the novice module by writing a test and being clinically evaluated in order to progress to the next level, Level 3. Level 2 of the continuous professional development programme was followed by the competent nurses' level, Level 3. This level of the continuous professional development programme was followed by the proficient nurses' level (Level 4) and the expert nurses' level (Level 5).

Considering that four nurses had resigned and had left at the end of December 2011 and that four new nurses were subsequently appointed to the CCU, the researcher and the nurse-in-charge came to an agreement and decided to begin the continuous professional development programme with a re-invitation to the nurses to be part of the CCU's journey towards enhancing synergy in the selected CCU in their endeavour to become a " ". The first topic was to teach and test the nurses' knowledge about a safe environment. The nurses failed their initial competency assessment due to unsafe alarm settings (see Annexure K.1 on CD for the re-invitation, the planned programme and the updated progress of the nurses with regard to the continuous professional development programme).

- **Patient rounds**

The first patient round took place on 21 May 2011. The patient round was led by the physician. The nurses working in the CCU on that day, three physiotherapists, two dieticians and one case manager attended the round. The comments from the education department's unit manager about the patient rounds were very positive and the researcher sent an email with an informative summary of the patient rounds to the nurses who did not or were unable to attend due to other duties. The summary was further distributed to the other two CCUs and the two high care units in the selected hospital. The physician requested and volunteered to lead patient rounds in the neuro-orthopaedic CCU; thus the patient rounds expanded to include the neuro-orthopaedic CCU (see the planned patient rounds for 2012, the comments on the rounds and a summary of one of the rounds in Annexure L.2 on CD).

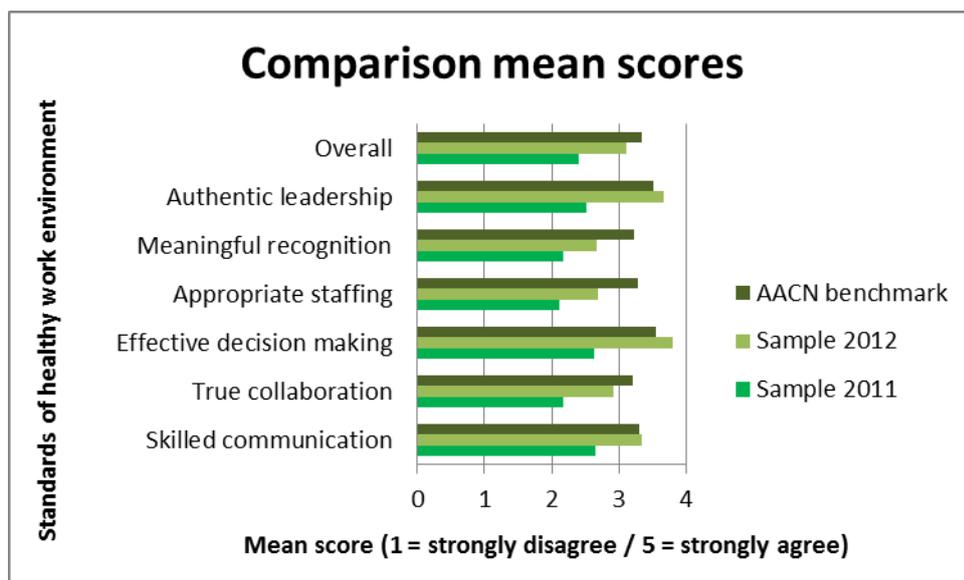
### **6.5.1 Re-assess the working environment**

The researcher withdrew from the journey towards enhancing synergy in the CCU in a selected hospital in Gauteng on 30 June 2012. A mailing list of all the nurses working in the CCU were created and the email invitation template, which was generated at the last step of registering the assessment of the CCU at the AACN, was copied and pasted to the message on the nurses' emails addresses and sent to the nurses. The opening date for the submission of the surveys was registered as 2 July 2012 and the closing date for submission was 31 July 2012. The nurses had to follow the instructions in the invitation email and submit the completed questionnaire to the AACN for analysis

(AACN 2011). The researcher sent email invitations to the CCU's email address, addressed to all the nurses who did not have access to a computer at home. The researcher confirmed receipt of emails. From 2 July to 31 July 2012 sixteen (n=16 [89%]) of the nurses submitted the completed assessments to the AACN for analysis.

### 6.5.2 Result of the re-assessment of the environment

The researcher received the assessment results pertaining to the environment from the AACN and compared the results to those obtained during the previous assessment in August/September 2011 and with AACN benchmark results (see Annexure H on CD for the assessment results and benchmark report). Graph 6.3 shows the comparison of the mean scores of the sample from 2011, the sample from 2012 and the AACN's benchmark scores.



**Graph 6.3 Comparison of mean scores**

Following are the conclusions drawn from the comparisons of the three scores as shown in Graph 6.3.

- The scores obtained for meaningful recognition, appropriate staffing and true collaboration still fell into the “Needs improvement” category, but it indicated a significant improvement when compared to Sample 2011.
- The scores obtained for authentic leadership, effective decision making and skilled communication were categorised as “Good” and indicated, by comparison, a significant improvement from Sample 2011.

- The overall score improved from the “Needs improvement” category to the “Good” category.

It is hereby concluded that, according to the scores obtained from the assessment of the environment of the CCU, the researcher and the nurses were indeed moving towards enhancing synergy in a CCU in a selected hospital in Gauteng.

## **6.6 SUMMARY**

Chapter 6 focused on PHASE 2: Towards synergy. The chapter reported on Cycle 4, the **LOOK** to assess existing synergy, the **THINK** about the existing synergy and the **ACT** on the disrupted synergy. An action plan was formulated and actions were implemented and reviewed. Cycle 5, the implementation of the reviewed actions and the results of the re-assessment of the work environment were discussed.

Chapter 7 provides the conclusions, recommendations, limitations and personal reflection of the researcher based on the collaborative approach towards enhancing synergy in a selected CCU in Gauteng.

## CHAPTER 7

### CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

“Desire is the key to motivation, but its determination and commitment to an unrelenting pursuit of your goal - a commitment to excellence - that will enable you to attain the success you seek.”

Mario Andretti

#### 7.1 INTRODUCTION

This chapter concludes the study conducted in order to answer the research question: “How can synergy be enhanced collaboratively in a CCU in Gauteng?” Chapter 7 presents the conclusions, limitations and recommendations of the study. A personal reflection of the researcher is included in this chapter. The overall aim of this study was to collaboratively enhance synergy in the CCU in Gauteng. To achieve this aim the study was guided by the AACN Synergy Model for Patient Care and the study objectives that were set to meet the overall aim comprised of two phases which, on the whole, consisted of five cycles

#### PHASE 1: ASSESS SYNERGY

Cycle 1: Step 1 and Step 2: Assess synergy: *Patients’ needs*

- Objective 1: Assess patients’ physiological and physical needs
- Objective 2: Assess patients’ psychological needs
- Objective 3: Assess families’ needs

Cycle 2: Step 4: Assess synergy: *Nurses’ competencies*

- Objective 4: Assess nurses’ competencies

Cycle 3: Step 5: Assess synergy: *Environment characteristics*

- Objective 5: Assess characteristics of the environment

## PHASE 2: TOWARDS SYNERGY

Cycle 4: Step 6: Assess existing synergy in the CCU

- Objective 6: Assess existing synergy in the CCU

Cycle 4: Step 7: Objective 7:

- Prioritise and plan action to enhance synergy in the CCU

Cycle 4: Step 8: Objective 8:

- Activate implementation of the planned actions in the CCU

Cycle 4: Step 9: Objective 9:

- Review the action plan

Cycle 5: Step 10: Objective 10:

- Activate implementation of the reviewed actions in the CCU

Cycle 5: Step 11: Objective 11:

- Re-assess the working environment

## 7.2 CONCLUSIONS

The research objectives of this study were attained. In this section, the research objectives and its application to this study are discussed by addressing the major findings of the study.

### 7.2.1 Objective 1: Assess patients' physiological and physical needs

This objective was achieved by the researcher. A document analysis was done using a checklist compiled by the researcher and validated by two clinical nurse specialists. The data were obtained from 124 patients and the following physiological and physical needs were assessed. The demographic data of the majority of patients were as follows:

- they were between 61 and 70 years old
- they were males
- their weights varied between 60 and 70 kg
- their risk profile included delirium and cardiac, respiratory, DVT and pressure sore risks
- their average length of stay in the CCU was one to five days

- the majority of patients had undergone surgical interventions.

The **physiological needs** of the patients admitted in the selected CCU were the following:

- Neurological system needs
  - GCS had to be done
  - Patient received sedation
  - Patients received neuromuscular blocking agents.
- Cardiovascular system needs
  - Monitoring heart rate, heart rhythm, non-invasive blood pressure, saturation, and temperature
  - Increased and decreased cardiac output
  - Pharmacological support: epinephrine, phenylephrine and vasodilator
  - CVP, intra-arterial monitoring
  - Invasive cardiac monitoring
- Respiratory system needs
  - ABG analysis
  - Non-invasive and invasive ventilation
  - Pressure CYCLE mode
- Gastrointestinal system needs
  - Nasogastric tube
  - Nasogastric tube on free drainage
- Nutritional needs
  - Enteral nutrition
  - Parenteral nutrition
- Renal system needs
  - Intake and output
  - Renal replacement therapy
- Endocrine system needs
  - Management hypo- and hyperglycaemia
  - Pharmacological support: short acting insulin
- Integumentary system
  - 40% burns care

- Wounds care
- Pressure care

The **physical needs** that were assessed from the document analysis were:

- Prevention of infection
  - Prevention of SSI
  - Prevention of VAP
  - Prevention of CLABSI
  - Prevention of CAUTI
- Pain management
  - Intramuscular
  - Intravenous
- Diagnostic test analysis
  - Chest radiograph
  - Albumin
  - Electrolytes
  - Procalcitonin
  - C-reactive protein
  - Full blood count
  - Urea and creatinine

### **7.2.2 Objective 2: Assess patients' psychological needs**

This objective was reached by the researcher and one of the nurses working in the selected CCU by making use of open-ended interviews. The following psychological needs were assessed:

- Resiliency: needed support in adaptability
- Vulnerability: needed to be informed, language barriers needed to be addressed and personalised care had to be attended to
- Participation in care: needed communication with nurses who were interpersonally skilled and the patients needed to be respected and considered.

### **7.2.3 Objective 3: Assess families' needs**

This objective was attained by the researcher through conducting open-ended interviews with the families of patients who had been admitted in the selected CCU. The following need was assessed:

- Vulnerability: families wanted to remain near the patient; they needed information and reassurance from the physicians.

### **7.2.4 Objective 4: Assess nurses' competencies**

This objective was reached by the researcher using competency rating scales and, for the purpose of this study, assessing the nurses' competencies related to cardiac monitoring, mechanical ventilation, analysis of arterial blood gasses, and chest radiographs. The nurses' knowledge related to the prevention of infection was also assessed. The nurses were found to be "Not competent" yet.

### **7.2.5 Objective 5: Assess characteristics of environment**

This objective was reached by the nurses working in the selected CCU by completing the AACN's healthy work environment assessment. The assessment results received from the AACN revealed an environment in need for improvement.

### **7.2.6 Objective 6: Assess existing synergy in the CCU**

This objective was reached by the researcher with the help of a statistician utilising the data from the assessed nurses' competencies and the characteristics of the environment in the selected CCU to assess the existing synergy in the selected CCU. The findings revealed disrupted synergy in the selected CCU.

### **7.2.7 Objective 7: Prioritise and plan action to enhance synergy in the CCU**

This objective was reached by the researcher, the nurses and the deputy nursing service manager during a focus group. The plan was finalised by the researcher and the three key drivers. The two main objectives were to develop the nurses' competencies

and to take responsibility to create a work environment conducive to answer the patients' needs and also to nurture the professional environment for nurses.

### **7.2.8 Objective 8: Activate implementation of the planned actions in the CCU**

This objective was reached by the researcher as the clinical facilitator, the nurses and a physician working in the CCU. The action plan was implemented with in-service training based on the competencies on which the nurses had been found "Not competent yet". The training was on a daily basis for only 10 minutes per day. The physician did training related to patients' risks as well as the acuity scoring of the patients. A file for each nurse, which was referred to as the '**Journey to Excellence**' file, was created. Nurses were booked to attend training for basic life support courses in 2012 while shift leaders were also booked for advanced cardiac life support courses in 2012.

The researcher's and nurses' request to appoint an acting unit manager was not approved by management. However, management gave approval for one of the key drivers to work four days a week from 7am to 7pm supernumerary to ensure continuity of care and to be the contact person in the CCU. The authority remained with the deputy nursing service manager. The ownership list was re-implemented and the newly appointed nurse-in-charge hung a '*Welcome to ward* ■' banner above the entrance of the unit. The 'buddy system' was re-implemented. The hospital manager approved the request for a '**Graffiti for Synergy Wall**' and undertook to arrange it with the workshop. One of the shift leaders took the responsibility to make the '**Carer of the Month**' box where the nurses could deposit their votes for the '**Carer of the Month**'.

### **7.2.9 Objective 9: Review the action plan**

This objective was reached by the researcher, the nurses, the nurse-in-charge and the physician. The nurses completed an open-ended questionnaire and a meeting was held and attended by the researcher, the physician and the three key drivers to reflect on the in-service training that had been done. Consensus was reached during the meeting to categorise the in-service training in patient rounds, product specialist training, on-the-spot teaching and an individualised continuous professional developing (CPD) programme for all the nurses. The reflections of the nurses from the questionnaire revealed a more positive atmosphere in the selected CCU and their experience was

confirmed with a letter from a physician, who had been on call in the selected CCU in December 2011, and who commented on the positive environment in the setting.

#### **7.2.10 Objective 10: Activate implementation of the reviewed actions in the CCU**

This objective was reached by the researcher, the nurses and the physician. The patient rounds commenced on 21 May 2012 and evoked positive comments. These rounds were attended by the nurses, the physiotherapists and the dieticians and was led by the physician every second Monday. The researcher commenced with the CPD programme, the nurses did BLS courses and two of the shift leaders did the ACLS course.

The ‘**Carer of the Month**’ voting box was not made by the shift leader. Since she had then taken maternity leave, the researcher made the box.

#### **7.2.11 Objective 11: Re-assess the working environment**

This objective was reached by the nurses re-assessing the working environment through completing the AACN healthy work environment assessment. The assessment results from the AACN revealed that the overall score of the environment improved from the “Needs improvement” category to the “Good” category.

### **7.3 LIMITATIONS**

Next, the limitations of this study are submitted with a short explanation of each one.

#### **7.3.1 Limitations regarding the patients and their families**

The contribution of the patients and their families were limited as the families were only allowed in the CCU during set visiting times. However, there were a few exceptions such as when some patients became disorientated being in the CCU environment the family are allowed to stay with the patients. Families who demanded to stay next to the patient because they were too concerned about the patients’ condition were also allowed to stay outside visiting hours.

### **7.3.2 Limitations regarding the nurses**

Only a limited number of nurse participants were included and the findings can therefore not be generalised to the broader nursing community. The focus was singularly on enhancing synergy in the CCU and therefore personal problems, personality types, and job satisfaction of the nurses that could have influenced their commitment and motivation were not taken into consideration.

The absence of a unit manager had a negative impact on the functioning of the CCU. The discontinuity of nurses in the CCU needed a person to ensure continuity of patient care and a leader to support, motivate and give direction to the nurses.

The nurses' level of emancipation and their perception that the creation of a healthy work environment was the responsibility of management could have influenced the expedition of enhancing synergy in the CCU.

### **7.3.3 Limitations regarding the environment**

The study was conducted in a selected CCU in a private hospital in Gauteng. In the private hospital environment the multidisciplinary team members such as the physiotherapists, the dieticians and the physicians run their own private practice and consequently their time dedicated to this study was limited.

The lack of appropriate staffing, the lack of true collaboration and the lack of meaningful recognition as revealed by the nurses could have influenced their job performance and motivation. The nature of a CCU related to unplanned patient admissions, availability of nurses due to extended patient care and the discontinuity of nurses due to shift rotations further limited the nurses' participation in the study.

### **7.3.4 Limitations regarding the action research approach**

The technical collaborative approach limited the emancipation of the nurses. With the absence of a unit manager and the disrupted synergy in the CCU the nurses required immediate direction and guidance on how to ensure optimal outcomes for the patients.

## **7.4 RECOMMENDATIONS**

In this section the researcher suggests recommendations towards enhancing synergy in the CCU.

### **7.4.1 Recommendations regarding the patients and their families**

The researcher recommends for the multidisciplinary team to view the patients and their families as a complete entity and adopt and adapt family-focused care in the selected CCU. Patients and their families want to take control of the patient's health to ensure he or she receives the best care possible.

### **7.4.2 Recommendations regarding the nurses**

- The researcher suggests that management should assess the nurses' needs in a way similar to how the patients' needs were assessed to ensure that physiological, physical and psychological healthy nurses render care to the patients.
- The nurses together with the multidisciplinary team should receive coaching in emotional intelligence to ensure the best outcomes for their interpersonal relationships among themselves as well as for their relationships with the patients.
- It is recommended that nurses must obtain compulsory CPD points to ensure evidence-informed practice.

### **7.4.3 Recommendations regarding the environment**

- Meaningful recognition was rated in 2011 and 2012 by the nurses as "Needs improvement". Therefore, the researcher suggests that the management pay attention to the way they reward the nurses. By implementing, for example, a reward system that the staff suggests and not a reward system management thinks is the best way to reward the nurses. Nurse retentions may be ensured in this way.

### **7.4.4 Recommendations regarding the AACN Model for Patient Care**

- The researcher recommends that the outcomes of the Synergy Model for Patient Care for the nurses not only focus on the outcomes related to the patients but also

on the outcomes for the nurse. The outcomes related to the synergy between the patients, the nurse and the environment will have a positive outcome with regard to nurses' competencies and skills.

#### **7.4.5 Recommendations for future research studies**

The topics listed below may be considered for future research studies.

- The identification of nurses' needs and how to empower them to be skilled in what the patient and the environment expect from them.
- The influence of the emotional intelligence of the multidisciplinary team on true collaboration in the critical care environment.
- A comparison on synergy between the patients' needs, the nurses' competencies and the characteristics of the environment in both public and private hospitals.
- Factors in the private hospitals that may disrupt synergy between the patients' needs, the nurses' competencies and the characteristics of the environment.
- A comparison of the level of competencies of nurses in the public and private hospitals.

#### **7.5 GUIDELINES FOR IMPROVING THE COMPETENCIES OF THE NURSES RELATED TO THE PATIENTS' NEEDS**

The guidelines focus on long-term solutions for the nurses to realise their dream of being a '*Unit of Excellence*' and are summarised.

The guidelines to improve nurses' competencies to answer the physiological and physical needs of patients include:

- The clinical facilitator and/or clinical nurse specialist must establish levels of competencies as discussed in Chapter 5, Section 5.2.3.
- The clinical facilitator and/or clinical nurse specialist must establish a baseline competency of all the nurses working in the CCU.
- Patients' needs must be assessed before the nurses' competencies can be assessed.

- There has to be a CPD plan in place to provide for the competency development of all levels of nurses. (refer to Chapter 6, Section 6.3.3).
- The nurses' progress with the CPD plan must be kept in the '**Journey to Excellence**' file. It must be monitored every three months and has to form part of the nurse's performance appraisal. When a nurse meets or exceeds expectation on his or her progress, they must be rewarded. Similarly, if a nurse's performance/progress is below expectation there must be a consequence for not having met expectations. The consequences must be determined by the unit manager and deputy nursing service manager.
- The nurse's progress as concerns the CPD programme must be her or his own responsibility. However, she or he has to be assured of the support of the clinical facilitator, the unit manager, the clinical nurse specialists and the physicians.
- The nurses at the proficient and expert levels and the unit manager must utilise the teachable moments in the unit and record it in the nurse's '**Journey to Excellence**' file.
- The medical representatives must be allowed to discuss their products such as parenteral and enteral feeding and record it in the '**Journey to Excellence**' file.
- The patient's hospital journey can be discussed in a patient round led by a physician and attended by the multidisciplinary team. (refer to Chapter 6, Section 6.3.3).
- Nurses must have a valid international accredited basic life support certificate and the shift leaders must have a valid international accredited advanced cardiac life support certificate.

The guidelines to improve nurses' competencies to answer patients' psychological needs include:

- The nurses must be reminded that the patients need to be treated holistically; hence, they must attend to the patients' psychological needs (refer to Chapter 4, Section 4.4.2).
- The shift leaders and the unit manager must lead by example and teach the nurses not only to inform the patients about the procedures to be done but also ask the question: "How do you experience it being in the CCU?"
- The nurses must develop their listening skills and, if necessary, consult with the hospital counsellor to counsel the patients.

- In multicultural nursing communities the nurses must adhere to the hospital's policy and speak only the corporate language, namely English. In special circumstances, for example, if the patient is a foreigner and illiterate in English, a translator can be used (refer to Chapter 4, Section 4.4.2).

The guidelines to improve nurses' competencies to answer patients' family needs include:

- The culture in the unit must change to family-centred care where the nurses recognise the pivotal role the family plays in the care of the critically ill patient. This change in culture will answer the families' need to remain near the patient (refer to Chapter 4, Section 4.5).
- To ensure that the families are well informed, they must receive information on the patient's progress and prognosis once a day. Furthermore, to reassure the families, their questions must be answered honestly and all information must be communicated clearly and accurately.
- The nurses must help the family to make an appointment with the treating physicians to discuss their concerns.

The guidelines to improve nurses' competencies to create a healthy work environment include:

- Nurses need guidance on how they can create a working environment and how to enhance true collaboration.
- Nurses need coaching in emotional intelligence and conflict management. This will empower them to manage the challenge to create and maintain a healthy work environment.

## **7.6 A PERSONAL REFLECTION**

Critical care nurses are there to care of critically ill patients. Nurses are there to take action and speak up on behalf of critically ill patients who are unable to advocate for themselves. As a clinical facilitator I believe that it is one of my responsibilities to advocate for the nurses *and* the patients. As the clinical facilitator I had to motivate the

nurses to think critically about the patients and the environment, to reflect on their practice, and to build their self-confidence to meet the demanding challenges of caring for the critically ill patients.

The responsibilities of being a clinical facilitator restricted my time management considerably. Also, with minimal research experience I regarded Stringer's action research routine of **LOOK**, **THINK** and **ACT** as an effective and efficient way to be action orientated, responsive and practical towards enhancing synergy between the patients' needs, the nurses' competencies, and the characteristics of the environment.

Action research was utilised to **LOOK** at existing synergy in the CCU and **THINK** about the gathered data in order to **ACT**. The **ACT** included the formulation of a plan, the implementation of the plan, and reviewing the results of the actions by collecting and evaluating the yielded data and reflecting on the results.

The document analysis in Step 1 of the first phase of the study was time-consuming but was executed without any effort; but for me Steps 2 and 3 with the patients and their families was an emotional experience. I realised once again the vulnerability of the patients and their families in a CCU and their profound need for caring, compassionate nurses to support and guide them through the traumatic experience of being in a CCU.

The assessment of the advanced beginners and competent nurses was a fulfilling experience because their eagerness to learn was uplifting. The assessment of the proficient and expert nurses I found difficult because they were my colleagues and I experienced that they might feel threatened or intimidated by the assessment. On reflection, however, they revealed that they felt exposed; they ascribed their reticence and apprehensive manner to the fact that they that they did not want to disappoint me.

The second phase of the study began with the focus group and the focus group facilitator took away a lot of my stress. I was surprised by the positive participation of the nurses in the focus group and their vision to be known as a '**Unit of Excellence**'. The efficient way in which the facilitator posed the questions led me to realise how important effective questioning is. I valued the sensitive way in which the SOAR strategy was applied and the positive responses the questions elicited.

The responsibility I undertook to negotiate with management for an acting unit manager was challenging. The request to appoint one of the shift leaders as an acting unit manager was not well received. The lack of trust management displayed in the shift leader's competency and capability evoked a lot of frustration in me but I had to abide by the decision made by management. I also became increasingly frustrated and felt quite powerless when promises from management to organise a '**Graffiti for Synergy Wall**' did not materialise. To me, the nurses' attitude of '*we are used to empty promises*' revealed a lack of trust in management.

The time spent on the in-service training night and day drained my energy considerably and at the time I made the following entry into my dairy: "I feel like drowning". Reflecting over the situation with the key drivers and the physician, it was decided that the in-service training would be changed and the responsibility to develop the nurses' competencies was given to the nurses and their professional development was linked to their performance appraisals. It was then that I realised that my goal to make a success of this study dominated my actions and that my focus was not on the empowerment of the nurses, but to get the nurses competent with spoonfeeding. With the implementation of the CPD plan I reminded them every week to return their learning modules; I stopped doing this and left it in their own hands but continued to assure them of my ongoing support. The nurses' commitment and positive participation was encouraging and it became very clear which of them had been motivated to develop their competencies.

The success of the patient rounds and the participation of the multidisciplinary team made me feel worthy. The positive influence of the nurse-in-charge was visible in the nurses' attitude change which gradually transformed the CCU environment into a caring unit where mutual respect for colleagues, evidence-based care and real dialogue with patients and their families transpired. This surprised management and they rewarded the nurse-in-charge. Although she had verbalised insecurity and a lack of confidence to me initially, the support and confidence she experienced from the key drivers, the nurses, me and the physician resulted in her growth in confidence.

Finally, I came to realise the worth of keeping a reflective dairy as it allowed me to analyse my personal growth, pinpoint significant events and learn from my successes as well as my failures. The decision I took to conduct this study has led me on a remarkable journey of self-discovery. Despite the gruelling hours, the disappointments

and the frustrations, I was reminded once again of the inexplicable resiliency of the human nature when faced with hardship, suffering and even death and the dedication and merit of those who care for them from the heart.

## **7.7 FINAL CONCLUSION**

This chapter concludes the thesis. It addressed the conclusion and limitations and recommendations were made. A personal reflection of the researcher was included. The overall aim, namely to collaboratively enhance synergy in the selected CCU in a private hospital in Gauteng, was achieved.

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AHA. See American Heart Association.

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# **Annexure: A**

## **Ethical approval to conduct the research**

**A.1 Department of Health Sciences (UNISA)**

**A.2 The Hospital Group**

**A.3 The Hospital**

## **A.1 Department of Health Sciences (UNISA)**

**UNIVERSITY OF SOUTH AFRICA  
Health Studies Higher Degrees Committee  
(HSHDC)  
College of Human Sciences  
ETHICAL CLEARANCE CERTIFICATE**

Date of meeting: 30 June 2011                      Project No: 865-779-3  
Project Title: Enhancing patient outcomes in a critical care unit in a private  
hospital in Tshwane through synergy  
Researcher: Juliana de Kock  
Degree: D Litt et Phil                      Code: DIS890B  
Supervisor: Prof SP Hattingh  
Qualification: D Litt et Phil  
Joint Supervisor: Dr T Heyns

**DECISION OF COMMITTEE**

Approved

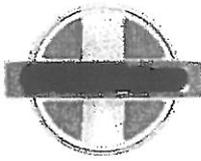
Conditionally Approved

  
**Prof E Potgieter**  
**RESEARCH COORDINATOR**

  
**Prof MC Bezuidenhout**  
**ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES**

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

## **A.2 The Hospital group**



██████████ Limited

Tel: +2 ██████████

Fax: Corporate ██████████

██████████, Sandton, South Africa

██████████, 2010, South Africa

## RESEARCH COMMITTEE FINAL APPROVAL OF RESEARCH

Ms Juliana de Kock  
PRETORIA

E mail: [cjdecock@absamail.co.za](mailto:cjdecock@absamail.co.za)

Dear Ms De Kock

### RE: ENHANCING PATIENT OUTCOMES IN A CRITICAL CARE UNIT IN A PRIVATE HOSPITAL IN TSHWANE THROUGH SYNERGY

The above-mentioned research was reviewed by the Research Committee's delegated members and it is with pleasure that we inform you that your application to conduct this research at ██████████ Pretoria ██████████ Hospital, has been approved, subject to the following:

- i) Research may now commence with this FINAL APPROVAL from the Academic Board of ██████████ (Research Committee).
- ii) All information with regards to ██████████ will be treated as confidential.
- iii) ██████████'s name will not be mentioned without written consent from the Academic Board of ██████████ (Research Committee).
- iv) All legal requirements with regards to patient rights and confidentiality will be complied with.
- v) Insurance will be provided and maintained for the duration of the research. This cover provided to the researcher must also protect both the staff and the hospital facility from potential liability
- vi) In accordance with MCC approval, that medicine will be administered by or under direction of the authorised Trialist
- vii) The research will be conducted in compliance with the GUIDELINES FOR GOOD PRACTICE IN THE CONDUCT OF CLINICAL TRIALS IN HUMAN PARTICIPANTS IN SOUTH AFRICA (2000)
- viii) The Academic Board of ██████████ (Research Committee) will be informed, in writing, of the proposed date of commencement of the project.

---

Executive Directors: R H Friedland (CEO), V E Firman (CFO), V L J Lithakanyane

Non-Executive Directors: S J Vilakazi (Chairman), T Brewer, A P H Jammine, J M Kahn, M J Kuscus, H R Levin, K D Moroka, M I Sacks, N Weltman

Company Secretary: L Bagwandeen Reg. No. 1996/008242/06

- (ix) ██████ must be furnished with a STATUS REPORT on the progress of the study at least annually on 30th September irrespective of the date of approval from Academic Board of ██████ (Research Committee) as well as a FINAL REPORT with reference to intention to publish and probable journals for publication, on completion of the study.
- x) A copy of the research report will be provided to ██████ once it is finally approved by the tertiary institution, or once complete.
- xi) ██████ has the right to implement any Best Practice recommendations from the research.
- xii) ██████ reserves the right to withdraw the approval for research at any time during the process, should the research prove to be detrimental to the subjects/██████ or should the researcher not comply with the conditions of approval.

We wish you success in your research.

Yours faithfully



Prof Dion du Plessis  
Full member, Research Committee & Medical Practitioner evaluating research applications as per  
Management and Governance Policy  
Date: 4/8/2011



Shannon Nell  
Chairperson: Research Committee  
██████ Healthcare Holdings Limited (██████)  
Date: 11/8/2011



## A.3 The Hospital

**LETTER OF PROVISIONAL PERMISSION TO CONDUCT RESEARCH IN A  
NETCARE FACILITY**

Name and surname of Nursing Manager Me Marinda Mantz  
Name and surname of Hospital Manager Me Rets Welman  
Date 10.03.11

Dear *enhancing patient outcomes* Pretoria ~~Netcare~~  
Research on *enhancing patient* ..... to be conducted in ..... Hospital

It is with pleasure that we inform you that your application to conduct research on (Title *enhancing patient outcomes through synergy of research*) ..... ~~Netcare~~ ..... HOSPITAL site has been approved in principle.

subject to the following:

- i) Approval by the Research Committee
- ii) All information with regards to Netcare will be treated as confidential.
- iii) Netcare's name will not be mentioned without written consent from the Academic Board of Netcare.
- iv) Where Netcare's name is mentioned, the research will not be published without written consent from the Academic Board of Netcare.
- v) A copy of the research will be provided to Netcare once it is finally approved by the tertiary institution, or once complete.
- vi) All legal requirements with regards to patient rights and confidentiality will be complied with.

We wish you success in your research.  
Yours faithfully

Signed by Hospital/Nursing manager *MM Mantz - NSM*  
Name of Hospital ~~Netcare~~ *Pretoria Hospital*  
Date *10/03/2011*

# **Annexure: B**

## **Copies of informed consent**

**B.1 Informed consent patient /families**

**B.2 Informed consent participants**

**(Assessment nurses' competencies)**

**B.3 Informed consent participants**

**(Assessment environment)**

## B.1

### **Informed consent patient /family**

Dear Patient/Family

### **RESEARCH: A collaborative approach towards enhancing synergy in a critical care unit in a selected hospital in Gauteng**

I am in the process of completing the DLitt et Phil degree at the university of South Africa.

The purpose of the study is to improve patient outcomes in a critical care unit in a selected hospital in Gauteng through synergy.

Synergy is according to the Audio English.net dictionary (2006:Online): "the working together of two things to produce an effect greater than the sum of their individual effects."

Improved outcomes can be ensured when your needs as patients and families are known and attended too. To determine patients' needs the researcher has to conduct interviews with patients. Your participation is of utmost importance.

The purpose of the interview is to determine your needs and from the information obtained a competency assessment instrument for nurses will be compiled. The interview will be limited to 15 minutes.

There are no risks involved in this study.

**Any information we obtained from you, are totally anonymous and confidential, and may be used for publication in a scientific journal as part of research findings. The information given by you will not be traceable back to you. Your participation in the study will be voluntary, and you may at any time without stating a reason, decide to withdraw.**

The study proposal was submitted to the Department of Health studies' Higher Degrees Committee at the University of South Africa.

I have read the above information leaflet and fully understand what is expected of me. I understand the content and meaning as explained to me, and I have the

opportunity to ask questions. I hereby volunteer to participate in this research project.

I, the Researcher will be available for any queries at the following number:

+27 828703467.

\_\_\_\_\_  
**Participant's signature**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Witness**

\_\_\_\_\_  
**Date**

Thank you

\_\_\_\_\_  
Juliana de Kock

(Researcher)

**B.2**

**Informed consent participants (Assessment nurses competencies)**

Dear Participant / Colleague,

**RESEARCH: A collaborative approach towards enhancing synergy in a critical care unit in a selected hospital in Gauteng**

I am in the process of completing the DLitt et Phil degree at the university of South Africa.

The purpose of the study is to enhance patient outcomes in a critical care unit in a selected hospital in Gauteng through synergy. Synergy is according to the Audio English.net dictionary (2006:Online): "the working together of two things to produce an effect greater than the sum of their individual effects." Enhanced outcomes can be ensured when patients and nurses are working together in a healthy environment.

The purpose of the assessment is to evaluate to what extent the nurses working in the CCU are competent to answer the patients' needs. The information will be used to determine existing synergy in the critical care unit and if synergy has to be enhanced. You will be assessed by me (clinical facilitator/researcher). There are no risks involved in this study.

**The assessment results will be managed totally anonymous and confidential, and may be used for publication in a scientific journal as part of research findings. The information given by you will not be traceable back to you. Your participation in the study will be voluntary, and at any time without stating a reason, decide to withdraw.**

The study proposal was submitted to the Research Ethics Committee, Faculty of Health Science at the University of South Africa. I, the Researcher will be available for any queries at the following number: +27 828703467

\_\_\_\_\_  
**Participant's signature**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
Juliana de Kock (Researcher)

B.3

**Informed consent participants (Healthy work environment)**

Dear Participant / Colleague,

**RESEARCH: A collaborative approach towards enhancing synergy in a critical care unit in a selected hospital in Gauteng**

I am in the process of completing the DLitt et Phil degree at the university of South Africa.

The purpose of the study is to enhance synergy in a critical care unit in a selected hospital in Gauteng. Synergy is according to the Audio English.net dictionary (2006:Online): "the working together of two things to produce an effect greater than the sum of their individual effects." Improved patient outcomes can be ensured when patients and nurses are working together in a healthy work environment.

The purpose of the questionnaire is to get hold of your view regarding the degree to which you assess the critical care unit as a healthy work environment. There are no risks involved in this study. The data will be used to formulate an action plan to enhance patient outcomes through synergy in the critical care unit.

You will receive an email invitation from the American Association for Critical Care Nurses (AACN) to assess the working environment in Ward ■. **The implication of completing the questionnaire and submit it to the AACN is that informed consent has been obtained from you. Thus any information from you, which are totally anonymous and confidential, may be used for publication in a scientific journal as part of research findings. The information given by you will not be traceable back to you. Your participation in the study will be voluntary, and you can at any time without stating a reason, decide to withdraw.**

The study proposal was submitted to the Department of Health studies' Higher Degrees Committee at the University of South Africa.

I, the Researcher will be available for any queries at the following number: +27 828703467

Thank you

Juliana de Kock

# **Annexure: C**

## **Quantitative instruments**

**C.1 Checklist: Pre-test (Patients' physical and physiological needs)**

**C.2 Final checklist**

**C.3 An example of the AACN healthy work environment questions**

**C.4 Competency rating scales**

- **Cardiac monitoring**
- **Mechanical ventilation**
- **Arterial blood gas analysis**
- **Best Care Always**
- **Chest radiograph interpretation**

**C.1 Checklist: Pre-test (Patients' physical and physiological needs)**



Respiratory  
 Cardiac  
 Renal  
 Abdominal  
 Orthopedic  
 Burns


**Predictability of patient**

**4 Patient risks**

Bleeding risk — Nie algemene risk  
 Risk for fall — Alle patiënte  
 Pressure sore risk  
 Diabetic — Herhaling van bloedglucose.  
 Cardiac risk  
 DVT Risk  
 Respiratory risk  
 Delirium risk


**5 Patient days**

01- 5 days  
 6 - 10 days  
 11 - 20 days  
 21- 30 days


**Complexity and stability of patient**

**6 Central nervous system**

Awake → Pas in by GCS  
 Sedated —  
 Coma Pas in by GCS  
 Paralysed  
 GCS


**7 Cardiovascular system**

**Stable**  
 Low cardiac output  
 Hypertention ↑ cardiac output → sal dit so in pas  
 Inotropes  
 Alpha stimulants  
 Vasodilators  
 Hypervolemia Pas in cardiac monitoring  
 Underwater drainage  
 Vigileo


**8 Respiratory system**

Sal in pas by Cardiac Monitoring  
 Vigileo CVP — gloepeer soalm

Ventilated  
Pressure mode  
Volume mode

Non-invasive ventilation

Poor oxygenation } Need van in bloedgas  
Poor ventilation }

Arterial blood gasses

Physiotherapy → Privaat hospitaal -  
functie physio in dag


### 9 Gastro-intestinal system

Nasogastric tube

Gastric losses

Feeding

Free drainage


### 10 Renal system

Positive balance

Negative balance

>1/2 ml/kg

<1/2ml/kg

CVVHD

Dialyses

} \*  
Need to do renal  
output


### 11 Skin

Wounds

Pressure sores

Burns: > 40%

Burns: < 40%


### 12 Endocrine

Bloodglucose

< 10

>10

Novorapid infusion

Novorapid subcutaneous


### 13 Blood results

UKE

LFT — Seldom done

FBC

CRP

PCT

Myoglobin — Seldom done


CMP + Electrolytes, hoewel  
 Albumine UK E die ondersoek  
 Proteine saam saam bespreek  
 Cardiac markers


14 MCS: Luki

--

Blood cultures

--

15 Medication

~~Antibiotics~~  
~~Cortison~~  
~~Anti-hypertensive~~  
~~Anti-coagulantis~~  
 PPI'S

Prevention DVT  
 Prevention VAP


16 Nutrition

Enteral  
 Parenteral


17 Xrays

--

SECTION C: PHYSICAL NEEDS

1 Physical needs:

Fully dependant on nursing care  
 Norton scale  
 Morse fall scale  
 Prone positioning  
 Oral care  
 Catheter care: Catheter

Fokus  
 sorg op  
 "prevention"


IV line care:

A. line  
 CVP  
 Vascath

Cardiac  
 Monitoring

\* VAP  
 \* CLABSI  
 \* CAUTI  
 \* SSI


Wound care

--

2 Suctioning

--

3 Pain management

~~Pain scale~~  
 Intravenous  
 Intramuscular  
 Oral

oppad saal toe


## **C.2: Final checklist**

D 1

**CHECKLIST FOR DOCUMENT ANALYSIS**

**SECTION A: PATIENTS' BIOGRAPHICAL DATA**

**INSTRUCTION:** Tick the most appropriate box

**1 Age:**

- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 60
- 61 - 70
- 71 - 80
- 80 +


**2 Weight:**

- 40 - 59
- 60 - 79
- 80 - 99
- 100+
- Not indicated


**3 Gender:**

- Male
- Female


**SECTION B PHYSIOLOGICAL NEEDS \_ PATIENT SYSTEM INVOLVED**

**1 New Admission**

- Yes
- No (Re-admission)


**2 Acuity**

- Acuity 18
- Acuity 20
- Acuity 22
- Acuity 24
- Vulnerability, resiliency

**3 Diagnosis:**

- Medical:
- Neurological
- Respiratory
- Cardiovascular


Renal  
Endocrine  
Gastrointestinal  
Hematology  
Accidental overdose


**Surgical:**  
Neuro  
Thoracic  
Urology  
Orthopedic  
Gynaecology  
Endocrine  
Abdominal  
Burns  
Skin graft


**Predictability of patient**

**4 Patient risks**

Pressure sore risk  
Cardiac risk  
Risk for deep vein thrombosis  
Respiratory risk  
Delirium risk


**5 Patient days**

01- 5 days  
6 - 10 days  
11 - 20 days  
21- 30 days


**Complexity and stability of patient**

**6 Neurological status**

GCS 15/15  
Sedation  
Neuromuscular blocking agents


**7 Cardiovascular function**

Normal cardiac output  
Low cardiac output  
Increased cardiac output  
Invasive Cardiac output monitoring  
Intra - Arterial blood pressure monitoring  
Central Venous pressure monitoring


**8 Respiratory status**

- Intubated
- Pressure cycle ventilation
- Non-invasive ventilation
- Arterial blood gas analysis


**9 Gastro-intestinal intervention**

- Nasogastric tube in situ
- Free drainage via nasogastric tube

**Nutritional support**

- Enteral nutrition
- Total Parenteral nutrition (TPN)


**10 Renal Function**

- > 0.5 ml/kg
- < 0.5ml/kg
- Continuous Venovenous hemofiltration-dialysis
- Heamodialysis


**11 Skin integrity**

- Wounds
- Pressure sores
- Burns: > 40%


**12 Bloodglucose profile of patients**

- 3.6mmol/L - 10 mmol/L
- >10 mmol/L
- Short acting insulin -continuous intravenous infusion
- Short acting insulin subcutaneous


**13 Diagnostic tests**

- Urea, Kreatinine
- Full Blood Count
- Cerum Reactive Proteien
- Procalcitonin
- Electrolytes
- Albumine
- Chest Xrays (Anterior Posterior view)
- Sputum (Microscopy; Culture and Sensitivity)


**15 Pharmacological treatment**

Low-molecular-weight heparine  
Protonpump inhibitor  
Adrenaline  
Phenylephrine  
Vasodilators


**1 Physiological needs: (Nursing care)**

Prevention of CAUTI  
Prevention of CLABSI  
Prevention of VAP  
Prevention of SSI


**3 Pain management**

Intravenous  
Intramuscular


**C.3 An example of the AACN healthy work environment questions**

## **AACN assessment tool for a healthy work environment**

### **Note:**

**This is only an example of the healthy work environment tool. Please visit the AACN at <http://www.hweteamtool.org/main/index> to obtain the information and original healthy work environment tool.**

### **Instructions on how to complete the questionnaire (Attachment to email invitation)**

1. In this questionnaire refers the name "other staff " to all the staff rendering a service to the patient in the critical care unit in a private hospital in Tshwane for example: Admission clerk; Physiotherapists; Pharmacists; Dieticians; Orthotists; Radiographers; Phlebotomists.
2. Answer each question by indicating your chosen answer with a cross (X) in the appropriate box.
3. If you need any assistance regarding submitting this questionnaire by email, you may contact Juliana de Kock (012) 345 1642 or 082 8703467.
4. It will take approximately 15 minutes to complete this questionnaire.
5. Please answer all 16 questions.

### D 3: Questionnaire: Healthy work environment assessment

(Adopted from AACN 2009:[Sa])

Please indicate to which extent you agree or disagree with the following statements about your working environment.

Strongly disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly agree

<b>STANDARD 1: Skilled communication</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly agree</b>
Administrators, nurse managers, physicians, nurses, and other staff maintain frequent communication to prevent each other from being surprised or caught off guard by decisions.	1	2	3	4	5
Administrators, nurse managers, physicians, nurses, and other staff make sure their actions match their words – they ‘walk their talk’.	1	2	3	4	5
Administrators, nurse managers, physicians, nurses, and other staff have zero-tolerance for disrespect and abuse. If they see or hear someone being disrespectful, they hold them accountable regardless of the person’s role or position.	1	2	3	4	5
<b>STANDARD 2: True collaboration</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly agree</b>
Administrators, nurse managers, physicians involve nurses and other staff to an appropriate degree when making important decisions.	1	2	3	4	5
Nurses and other staff feel able to influence the policies, procedures, and bureaucracy around them.	1	2	3	4	5
When administrators, nurse managers, physicians speak with nurses and other staff, it’s not one way communication or order giving. Instead, they seek input and use it to shape decisions.	1	2	3	4	5
<b>STANDARD 3: Effective decision making</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly agree</b>
Administrators, nurse managers, physicians, nurses, and other staff are consistent in their use of data-driven, logic decision-making processes to make sure their decisions are the highest quality	1	2	3	4	5
The right department, professions, and groups are involved in important decisions.	1	2	3	4	5

Administrators, nurse managers, physicians, nurses, and other staff are careful to consider the patient's and family's perspectives whenever they are making important decisions	1	2	3	4	5
<b>STANDARD 4: Appropriate staffing</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Sa</b>
Administrators and nurse managers work with nurses and other staff to make sure there is enough staff to maintain patient safety.	1	2	3	4	5
Administrators and nurse managers make sure there is the right mix of nurses and other staff to ensure optimal outcomes	1	2	3	4	5
Support services are provided at a level that allows nurses and other staff to spend their time on the priorities and requirements of patient and family.	1	2	3	4	5
<b>STANDARD 5: Meaningful recognition</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Sa</b>
The formal reward and recognition systems work to make nurses and other staff feel valued	1	2	3	4	5
Administrators, nurse managers, physicians, nurses, and other staff members speak up and let people know when they've done a good job.	1	2	3	4	5
There are motivating opportunities for personal growth, development, and advancement.	1	2	3	4	5
<b>STANDARD 6: Authentic leadership</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Sa</b>
Most nurses and other staff here have a positive relationship with their nurse leaders (managers, directors, advanced practice nurses, etc.)	1	2	3	4	5
Nurse leaders (managers, directors, advanced practice nurses) demonstrate understanding of the requirements and the dynamics at the point of care, and use this knowledge to work for a healthy work environment.	1	2	3	4	5
Nurse leaders (managers, directors, advanced practice nurses etc.) are given the access and authority required to play a role making key decisions.	1	2	3	4	5

Thank you for sharing your views with the researcher. The information obtained will be used to formulate an action plan to enhance patient outcomes through synergy in a CCU in a private hospital in Tshwane.

## **C.4 Competency rating scales**

- **Cardiac monitoring**
- **Mechanical ventilation**
- **Arterial blood gas analysis**
- **Best Care Always**
- **Chest radiograph interpretation**

## CARDIAC MONITORING

Criteria marked F are critical criteria. If a staff member fails these criteria, he/she fails this assessment. One mark is allocated if staff member is compliant. No mark is allocated if staff member is non-compliant.

A minimum of 85% is needed to pass this evaluation

C = Compliant  
 NC = Non compliant  
 N/A = Not applicable

All the components of Cardiac Monitoring MUST be signed off. You may use more than one patient to accomplish this goal.

<b>COGNITIVE</b>			
	C	NC	NA
Explains the reasons for monitoring this patient			
Rationalizes alarm limits			
Explain the nursing database and associated pathophysiology of the patient's disease			
Explain indications to Level & Zero			
<b>TOTAL</b> /4			

<b>PSYCHOMOTOR</b>			
<b>General</b>			
	C	NC	NA
Identify the patient			
Washes hands and dons protective gear			
Ensures monitor is plugged into UPS and switched on / activated			
Ensures alarm volume sound is audible		F	
<b>TOTAL</b> /4		F	

<b>ECG Monitoring</b>			
	C	NC	NA
Prepares patient's skin			
Places the electrodes on the chest correctly			
Adjust the size of the ECG tracing as indicated			
Connects leads onto electrodes correctly			
Identifies heart rate and rhythm		F	
Utilizes audible QRS volume correctly		F	
Activate pacing monitoring if the patient has a pacemaker		F	
Sets heart rate alarm correctly			
<b>TOTAL</b> /8		F	

<b>NIBP Monitoring</b>			
	C	NC	NA
Chooses correct size NIBP cuff for the patient			
Correctly connects NIBP hose			
Applies the NIBP cuff correctly			
Chooses appropriate limb		F	
Chooses the appropriate time cycle		F	
Sets SBP alarm correctly			
Sets DBP alarm correctly		F	
Sets MAP alarm correctly		F	
<b>TOTAL</b> /8		F	

<b>Level &amp; Zero</b>			
	C	NC	NA
Plugs all appropriate pressure interface cables into correct modules			
Connects all appropriate interface cables to the correct transducers			
Position patient correctly			
Levels all transducers at the phlebostatic axis			
Ensure there is no added infusion on the central line		F	
Ensure pressure bag @ 300mmHg		F	
Close the line to the patient			
Flush the line to remove air			
Zero pressure on monitor			
Open line to the patient			
Confirm correct CVP and/or Arterial tracing on the monitor			
<b>TOTAL</b> /10		F	

Ensure appropriate scale			
<b>TOTAL /12</b>			
<b>Arterial BP Monitoring</b>			
Identifies Arterial Pressure waveforms correctly			
Analyzes Arterial Pressure waveforms correctly			
Sets SBP alarm correctly		F	
Sets DBP alarm correctly		F	
Sets MAP alarm correctly		F	
<b>TOTAL /5</b>			
<b>CVP Monitoring</b>			
Identifies Central Venous Pressure waveforms correctly			
Analyzes Central Venous Pressure waveforms correctly			
Sets CVP MAP alarms correctly		F	
<b>TOTAL /3</b>			
<b>SpO<sub>2</sub> Monitoring</b>			
Selects the right size and type of saturation probe/sensor			
Connects probe/sensor to monitor correctly			
Applies the saturation probe/sensor correctly considering site selection			
Obtains the SpO <sub>2</sub> waveform and reading			
Check site hourly for perfusion			
Sets SpO <sub>2</sub> alarm correctly		F	
<b>TOTAL /6</b>			
<b>Temperature Monitoring</b>			
Correctly transduces the patient temperature on the monitor			
Sets temperature alarm appropriately		F	
Washes hands			
<b>TOTAL /3</b>			

<b>AFFECTIVE</b>	<b>C</b>	<b>NC</b>	<b>NA</b>
Explains procedure to the patient.			
Maintains communication with patient/relatives.			
Tidies the environment and places patient in a comfortable position			
Records correctly			
Reports all relevant information			
<b>TOTAL /5</b>			

Total Mark      /      =      %

Competent	
Not Yet Competent	

Date \_\_\_\_\_

Assessor \_\_\_\_\_

Candidate \_\_\_\_\_

## CARE of an ADULT PATIENT on a MECHANICAL VENTILATOR

Criteria marked F are critical criteria. If a staff member fails these criteria, he/she fails this assessment. One mark is allocated if staff member is compliant. No mark is allocated if staff member is non-compliant. A minimum of 85% is needed to pass this evaluation.

C = Compliant  
 NC = Non-compliant  
 N/A = Not applicable

COGNITIVE			
	C	NC	NA
Explains the reason for ventilation in this patient			
Calculates the patient's ventilation needs in relation to:			
* Weight.			
* Arterial blood gas analysis			
Describes the functioning of the ventilator in terms of:			
* Cycling.			
* Modes.			
Explains this patient's ventilation settings in relation to the pathophysiology:			
Identifies and record the following settings			
* Mode of ventilation.			
* Inspiratory pressure		F	
* Plateau time / Pause time		F	
* Inspiratory Time			
* Peak flow			
* Ventilatory rate.		F	
* Tidal volume.		F	
* Minute volume.		F	
* FiO <sub>2</sub>		F	
* PEEP		F	
* Peak pressure limit.		F	
* Sensitivity.		F	
* I:E ratio.		F	
* Pressure support.		F	
Define the following settings		F	
* Mode of ventilation.			
* Rate		F	
* Inspiratory pressure		F	
* Tidal volume		F	
* Minute volume			
* FiO <sub>2</sub>			
* PEEP		F	
* Peak pressure limit.		F	
* Sensitivity.		F	
* Apnoea alarm		F	
* Pressure support.		F	
Explain normal values for the following settings		F	
* Rate			
* Inspiratory pressure		F	
* Tidal volume		F	
* Minute volume			
* FiO <sub>2</sub>			
* PEEP		F	
* Peak pressure limit.		F	
* Apnoea alarm		F	
Alarms set correctly		F	
Act appropriately to alarm activation		F	
PSYCHOMOTOR			
	C	NC	NA

PSYCHOMOTOR			
	C	NC	NA
Ensures the presence of working, clean resuscitator bag, PEEP valve, reservoir, mask, oral airway and flow meter.		F	
Ensures presence of a working suction and suction catheter		F	
Ensures that artificial airway is safe and correctly managed.		F	
Preserves sterility of circuit.			
Assesses airway patency by			
* Evaluation of symmetry of chest movements, cyanosis and chest auscultation.		F	
Assesses patient response to ventilation by analyzing			
* Respiratory rate		F	
* Tidal volume.		F	
* Airway pressures.		F	
* Vital data.		F	
* SpO <sub>2</sub> .		F	
* Arterial blood gas		F	
Evaluates effectiveness of ventilation.			
Implements appropriate corrective measures.			
Ensures that circuit is correctly positioned.			
Identifies systemic adverse effects of ventilation on patient.			
Documents all ventilator data and patient responses to ventilation.			
Renders appropriate basic critical care nursing.			
AFFECTIVE			
	C	NC	NA
Facilitates effective communication with patient.			

Deduct 1 mark for each component that is not applicable

Mark / = \_\_\_\_\_ %

Competent	
Not Yet Competent	

Date \_\_\_\_\_

Assessor \_\_\_\_\_

Candidate \_\_\_\_\_

Attach a copy of a blood gas and complete the form provided

	Normal Ranges	Value	Interpretation
PO2			
SaO2			
AaDPO2			
Shunt			
pH			
PCO2			
HCO3			
BE			
Lactate			
Hb			
Diagnosis			
Nursing Intervention			

Clinical Facilitator \_\_\_\_\_

Date \_\_\_\_\_

## BEST CARE ALWAYS

One mark is allocated if staff member is compliant. No mark is allocated if staff member is non-compliant.

A minimum of 85% is needed to pass this evaluation.

**C** = Compliant  
**NC** = Non-compliant  
**N/A** = Not applicable

CAUTI BESTCARE ALWAYS			
	C	N/C	N/A
Maintain sterile, continuous closed drainage system			
Properly secured			
Bag below bladder			
Unobstructed urine flow			
Empty bag regularly – separate collecting container, draining spigot not touching collecting container			
Meatal care			

CLABSI BESTCARE ALWAYS			
	C	N/C	N/A
Hand Higiene			
Maximal barrier precautions			
Chlorhexadine skin antiseptis			
Preferred site: Subclavian			
Daily review necessity			
Line secured			
Dressing clean and intact			

VAP BESTCARE ALWAYS			
	C	N/C	N/A
Elevation head of bed 30° - 45 °			
Sedation vacations			
Peptic Ulcer disease prophylaxis			
DVT prophylaxis			

Compiled Juliana de Kock (September 2011)

Analyze one chest x-ray with Clinical Facilitator and complete the form provided

	Normal Ranges	Value	Interpretation
Identification			
View			
Exposure			
Rotation			
Inspiration			
Lung fields complete			
Soft tissue			
Bony structures			
Diaphragm			
Pleura			
Mediastinum			
Cardio-Thoracic ratio			
Heart shape			
Lung fields			
Invasive lines			
Nursing Intervention			

Clinical Facilitator \_\_\_\_\_

Date \_\_\_\_\_

# **Annexure: D**

## **Qualitative instruments**

**D.1 Open-ended interview schedule patient and families**

**D.2 Proposed questions for focus group**

**D3 Open-ended questionnaire reviewing the action plan**

**D.1 Open-ended interview schedule patient and families**

**Open-ended interview schedule: (Qualitative data collection)**

Open-ended interviews will be conducted with patients and their families in a CCU in a selected hospital in Gauteng to assess their psychological needs and their experience of nursing care in the CCU.

**Open-ended questions prepared for the interview:**

- How did you FEEL being in the critical care unit?
- If you are granted three wishes for the next patient what would that be?

**D.2 Proposed questions for focus group**

All the questions relate to you as nurses working in [REDACTED]

### Strengths

1. What are we as nurses working in 10 ICU doing really well?
2. What are our greatest assets? What are we known for in 10 ICU?
3. What are we most proud of accomplishing?
4. What do our strengths tell us about our skills?
5. What are our strengths in the environment we work in?

**Opportunities**

1. How do we collectively understand outside threats?

2. How can we reframe to see the opportunities?

3. What does the employer ask of you to do?

4. What does the client (patient) ask of you to do?

5. How can we best partner with the multi-disciplinary team?

**Results**

1. What are our measurable results for:

a) The client (patient)

b) The nurse

c) The environment

2. What do we want to be known for?

3. How can we make our strengths visible?

4. How can we make our opportunities visible?



5. How can we make our aspirations visible?

**D.3 Open-ended questionnaire reviewing the action plan**

Ward ●

What was your best experience the past months in the CCU?

If you are given an opportunity to wish something for the nurses what would that be?

If you are given an opportunity to wish something for the unit what would that be?

If you are given an opportunity to wish something for the patient what would that be?

# **Annexure: E**

**Letter from the editor**

**Suzette M. Swart**

**FULL MEMBER: Professional Editors' Group**

---

16 February 2013

**TO WHOM IT MAY CONCERN**

I, Suzette Marié Swart (ID 5211190101087), confirm that I have edited the following:

**Student:**

Juliana de Kock

**Title:**

**A COLLABORATIVE APPROACH TOWARDS ENHANCING SYNERGY IN A  
CRITICAL CARE UNIT IN GAUTENG**

Thank you

Suzette M Swart (not signed – sent electronically)  
0825533302  
smswart@vodamail.co.za

**LANGUAGE PRACTITIONER/EDITOR/FACILITATOR:**

The Consortium for Language and Dimensional Dynamics (CLDD)  
University of Pretoria (UP)  
Tshwane University of Technology (TUT)  
University of Johannesburg (UJ)  
University of South Africa (UNISA)  
Milpark Business School  
South African National Defence Force (SANDF)  
South African Civil Aviation Authority (SACAA)

### **The edit included the following:**

- Spelling
- UK vs USA English
- Vocabulary
- Punctuation
- Grammar (tenses; pronoun matches; word choice etc.)
- Language tips
- Correct acronyms (please supply list)
- Consistency in terminology, italisation etc.
- Sentence construction
- Suggestions for text with unclear meaning
- Basic references
- Basic layout, font, numbering etc.
- Logic, relevance, clarity, consistency
- Checking references against in-text referencing

### **The edit excluded:**

- Correctness of crediting another's work – PLAGIARISM.
- Content
- Correctness or truth of information (unless obvious)
- Correctness/spelling of specific technical terms and words (unless obvious)
- Correctness/spelling of unfamiliar names and proper nouns (unless obvious)
- Correctness of specific formulae or symbols, or illustrations
- Style
- Professional formatting

Suzette M Swart

# **Annexure: F**

## **Report from the statistician**

**A Collaborative Approach Towards Enhancing Synergy  
in a Critical Care Unit in Gauteng**

Data Analysis

for

Juliana de Kock

UNISA

Prepared by:

Dr Petra Gaylard, DMSA  
November 2012

## **Background**

The client gathered the following data as part of a larger, mixed methods, study:

- Patient physical and psychosocial needs (from patient records) (n=124)
- CCU nurse competencies in various skills (assessed by researcher) (n=16 nurses)
- Healthy work environment assessment (self-completed by CCU nurses) (n=17 nurses)

## **Objectives**

- Descriptive statistics for all three data sources.
- Comparison of patient needs vs. nurse competencies vs. environmental assessments.

## **Data files**

- Checklist met data van 124 patient - Tydperk June 2010 - MEI 2011.xlsx  
grafieke.xlsx
- Competency assessment.xlsx
- HWEReport August September 2011.pdf

## **Data preparation / cleaning**

- Nurse competencies: Each nurse's competency score for each competency was further classified as Pass or Fail.

## **Analysis: general**

Data analysis of the nurse competency data was carried out in SAS.

Citation: SAS Institute Inc., *SAS Software, version 9.3 for Windows*, Cary, NC, USA: SAS Institute Inc. (2002-2010).

The 95% confidence level was used throughout, unless specified otherwise.

For tables and graphs, see the spreadsheet JDK Results.xlsx.

# **Annexure G:**

## **Copies of documentation used**

**G.1 Critical flow sheet (See PDF on CD)**

**G.2 Voice of the customer**

**G.3 Example of nurses' field notes (written concerns)**

**G.4 Example of nurses' field notes (on-the-spot interviews)**

**G.5 The Hospital's pre-admission form**

## **G.1 Critical flow sheet (See PDF on CD)**

# G.2 Voice of the customer



# Rate our Care

Please place a cross within the appropriate box  using a black or blue ballpoint pen or write in the space provided. Please do not fold this survey.

This survey does not form part of your patient record. Your answers will be treated in confidence and will only be used to provide information about the quality of service Netcare provides, and to help us improve this service.

You're in safe hands

FOR OFFICE USE ONLY  
PLACE ADMISSION STICKER HERE

## 1. OVERALL

Date survey completed:

D  /  M  /  Y  Y  Y  Y

Overall, how satisfied were you with the service you received at our hospital? .....

Not at all satisfied	Slightly satisfied	Somewhat satisfied	Very satisfied	Completely satisfied
<input type="checkbox"/>				
0	1	2	3	4
5	6	7	8	9
10	Extremely likely			

How likely is it that you would recommend our hospital to a friend or family member? .....

Not at all likely

## 2. MAIN RECEPTION

Waiting time in reception .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

How long did you wait in reception   minutes

## 3. WARD FACILITIES

The way in which you were welcomed to the ward .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

Explanation of the ward facilities and routines .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

Noise levels in the ward .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

Cleanliness of the ward .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

Overall condition of ward facilities (including physical environment, nurse bell, televisions, etc.) .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

The overall facilities provided for your family and visitors .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

## 4. WARD NURSING CARE

The ability of nurses to care for you .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

Compassion of nurses (i.e. empathy and concern) .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

Availability of nursing staff .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

The way nurses explained nursing procedures to you .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

The way nurses managed your pain .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

The information provided to you by the nurse on discharge (e.g. follow-up visits, wound-care, etc.) .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

## 5. DOCTOR CARE

Overall level of care provided by your doctor .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

The way your doctor explained medical / surgical procedures to you .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

## 6. SPECIALIST SERVICES

(Please rate if you had X-rays, blood tests or therapy)

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

The overall care received from radiology (X-ray) staff .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

Waiting time in radiology before you had your X-rays taken .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

The care with which you were treated when your blood was taken .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

The overall care received from the Therapy Division (physiotherapy, occupational therapy, speech therapy) .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

## 7. THEATRE CARE

(Please rate if you went into theatre)

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

The overall care received from theatre staff .....

Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
<input type="checkbox"/>				

Please turn over



**8. CATERING FACILITIES (Please rate if applicable)**

	Unacceptable 0 - 24%	Poor 25 - 48%	Fair 50 - 74%	Good 75 - 99%	Excellent 90 - 100%
The overall service received from the catering ward hostess	<input type="checkbox"/>				
The menu choice and selection	<input type="checkbox"/>				
The presentation of meals	<input type="checkbox"/>				
Food temperature	<input type="checkbox"/>				
Taste of meals	<input type="checkbox"/>				

**9. GENERAL FACILITIES**

	Unacceptable 0%	Poor 25%	Fair 50%	Good 75%	Excellent 100%
The overall maintenance and upkeep of our hospital building and facilities	<input type="checkbox"/>				
The parking facilities	<input type="checkbox"/>				
Your experience of the following support services staff:					
1. Parking	<input type="checkbox"/>				
2. Security	<input type="checkbox"/>				
3. Portering	<input type="checkbox"/>				
4. Cleaning	<input type="checkbox"/>				
5. Administration	<input type="checkbox"/>				
The overall service provided by the coffee shop	<input type="checkbox"/>				

**10. How did you hear about this Netcare Hospital? (Please select one)**

Referred by doctor  Doctor's name:

Referred by family/friend

Media (e.g. newspaper, radio)

Netcare staff

Other  Please specify:

**11. RECOGNISE A NETCARE STAFF MEMBER**

Did any member(s) of staff go out of their way to assist you during your stay?  Yes  No

If yes, please provide their name(s) and surname(s):

Please describe what they did:

12. Did any member of the hospital management team visit you? (e.g. patient liaison officer, marketing officer, unit manager, nursing manager, hospital manager) Yes  No

13. GENERAL COMMENTS (Please tell us what we're doing well or how we can improve our service)

14. Would you like management to contact you about any issues you raised in the above? Yes  No

15. If you answered Yes to Q14, please provide your day time contact details: Name:

Contact Number:

**16. SURVEY COMPLETED BY (Please select one)**

Patient  If Netcare staff member, please provide employee clock-in number:

Friend or relative on behalf of patient

Netcare staff member

Signature:

Thank you for completing this survey.  
It is only with your feedback that we can constantly strive to improve our levels of service and care to you, our valued patient.

*Jacques*

Jacques Du Plessis, Managing Director: Netcare Hospital Division  
Care • Dignity • Participation • Truth • Passion

CALL 0860 NETCARE (0860 638 22 73) for compliments and complaints



### **G.3 Example of nurses' field notes (written concerns)**

- = Disrespect towards colleagues / Shiftleaders / Unitmanager
- = Transcription of Medication (wrong doses / wrong frequency)
- = Infection Control / OTS
- = Knowledge of Medication / Equipment
- = Policies + procedures (Don't read + sign them)
- = Poor Team work amongst Dr's + RN's  
 (Disagreement with treatment of patients)  
 - No acknowledgement towards our interest + knowledge
- = Agency staff - knowledge poor in ICU
- = Basic Care deteriorates - or not done
- A lot of stress → due to staff shortage in competent staff. they work with
- Staff cancellations on short time
- Lack of ownership towards equipment / patient care / and medication / and costs of revenue.
- Staff taken away to other units + have to cope with less
- = Nurse levels / for pts - staff don't realize how bad it is.
- = Alarms not adhered to.

- ① Unskilled personnel working in Icu.
- ② Poor team or collaboration with Drs
- ③ Failure to adhere to infection control principles amongst staff.
- ④ Wrong medication transcriptions lead to defaulting meds
- ⑤ Poor management support eg expecting shift leaders to stretch themselves until they can't handle it → asking for staff to work in other unit whereas we are short staff as well.
- ⑥ Poor communication and interpersonal relations between staff and patient
- ⑦ Lack of linen and poor management of the matter.
- ⑧ Lack of in service training to update staff with advanced studies.
9. In subordinate of staff to shift leaders.

From Stephina.

## **G.4 Example of nurses' field notes (on-the-spot interviews)**

① - Hoe voel u om in ICU te wees?  
- Hoe voel u dat u familielid in ICU is?

\* Voel dat personeel nie heeltyd beskikbaar is by bed soos in ICU hoort nie.  
Moet soms lank wag vir diens of in versoek.

\* Nie altyd behulpsaam met ete nie. Kos word yskou.

② - As u 3 wense toegeken word vir die pasient - langs u wat sal dit wees?

\* Alle voorspoed en spoedige beterkap.

③ - Het u enige geestlike behoeftes gehad en - was daarna omgesien?

\* Familie het predikant laat weet in Rustenburg wat besoek afgelê het.



Mr JA ROUX  
PO BOX 314  
WATERFALL MALL  
WATERFALL MALL  
0829  
KEYHEALTH  
Dr. : J BECKER

Netcare Pretoria East Hospital  
PIN: 1001654890  
CASE NO: 1001777064  
JOHANNES  
HTEL: 0828867180 WTEL: .  
ADM DATE: 26.10.2011 ADM TIME: 06:06  
WARD: Ward 10 GICU  
I.D.: 3608106023086 AGE: 75  
GENDER: M  
PLAN: SILVER  
DEP: 01 PAR: HHH80124734  
PR: 4602463  
MEM NO: 4833163

## **G.5 The Hospital's pre-admission**

# PRETORIA EAST HOSPITAL - PRE-ADMISSION QUESTIONNAIRE



## Place Patient Sticker Here

Hospital / Clinic: .....  
 Admission No.: .....  
 Title: Prof. Dr. Rev. Mr. Mrs. Ms.  
 Surname: .....  
 Names: .....  
 Attending Doctor: .....

## PATIENT DETAILS

Age: ..... Religion: .....  
 Tel No. (Home): .....  
 Cell No.: .....  
 Emergency Contact Person: .....  
 Tel No.: .....

Dear patient.

Please complete all questions marked in red. Should you answer yes, you may be required to fill in additional details. Should you answer no, proceed to the next question marked in red. Please note that you need to complete all questions in section 12 (even those marked in blue).

## SECTION 1 - REASON FOR ADMISSION

Surgery scheduled / Reason for admission: .....

Date of surgery (if known): .....

Date of admission: .....

## SECTION 2 - BODY MASS INDEX

Weight (kg): .....

Height (meters): .....

Neck circumference (cm) (Males Only): .....

## SECTION 3 - ANAESTHETIC HISTORY

Previous anaesthetic related problems: Yes  No

If Yes: Scoline apnoea

Malignant hyperthermia

Excessive nausea and vomiting

Other (1): .....

Other (2): .....

Have you ever suffered from excessive or prolonged bleeding following previous surgical procedure(s) or tooth extractions? Yes  No

If Yes, please give details (Bleed R): .....

Females Only: Is there a possibility that you may be pregnant: Yes  No

If Yes, please notify your doctor and the nursing personnel.

## SECTION 4 - MEDICATION

Do you use Warfarin? Yes  No  If yes, Date last used ..... (Bleed R)

Do you use Disprin / Ecotrin on a daily basis? Yes  No  If yes, Date last used ..... (Bleed R)

Do you use Plavix / Clopidogrel? Yes  No  If yes, Date last used ..... (Bleed R)

Do you use Cortisone Tablets? Yes  No  If yes, Date last used ..... (Bleed R)

Are you using Homeopathic Medication? Yes  No  If yes, Date last used .....

(Females) Are you using Oral Contraception? Yes  No  If yes, Date last used ..... (Clot R1)

(Females) Are you using Hormone Replacement Therapy? Yes  No  If yes, Date last used ..... (Clot R1)

Are you using Pain Tablets? Yes  No  If yes, Name(s) 1..... 2.....

Total number used per day .....

Please list all the chronic medication you are taking. You need not list vitamins and other supplements. If you do not know the dosage, just list the name of the medication. **NO CHRONIC MEDICATION**

1. ....
2. ....
3. ....
4. ....
5. ....
6. ....
7. ....
8. ....
9. ....
10. ....
11. ....
12. ....
13. ....
14. ....
15. ....
16. ....
17. ....
18. ....

**SECTION 5 - FAMILY HISTORY (Father, Mother, Brothers and Sisters)**

1. Premature heart disease (heart attack, angina) - Males < 55 yrs, Females < 65 yrs (Cardiac R): Yes  No
2. Cardiac bypass operation or cardiac stent - Males < 55 yrs, Females < 65 yrs (Cardiac R) Yes  No
3. Blood clots to the leg or lung - any age (Clot R3) Yes  No

If yes, please specify family member(s) and age at first presentation

1..... 3.....  
 2..... 4.....

**SECTION 6 - ALLERGIES**

Have you ever suffered an allergic reaction before? Yes  No

If Yes, please specify the substance / medication below:

1..... 4..... 7.....  
 2..... 5..... 8.....  
 3..... 6..... 9.....

**SECTION 7 - SURGICAL HISTORY**

1. Have you ever undergone a cardiac bypass operation (Cardiac R)? Yes  No   
 If Yes, (i) Total number of operations:..... (ii) Year of most recent operation.....
2. Have you ever had a stent placed in the coronary artery (Cardiac R)? Yes  No   
 If Yes, (i) Total number of placements:..... (ii) Year of most recent placement.....
3. Have you ever had a coronary artery stretched (angioplasty) (Cardiac R)? Yes  No   
 If Yes, (i) Total number of times:..... (ii) Year of most recent angioplasty.....
4. Have you ever had a coronary angiogram (x-ray mapping of the coronary artery)? Yes  No   
 If Yes, year of most recent procedure..... Result: Normal  Abnormal  Don't Know
5. Have you undergone a major operation within the past 30 days (Clot R1)? Yes  No   
 If Yes, please specify:.....

**OTHER SURGERY** (It is not necessary to list minor operations such as tonsils, appendix, tooth operations, etc.

If you had more than 1 surgical procedure, e.g. neck surgery, list the total number and year of the **most recent** operation).

No previous major surgery

Type of Operation	Total No.	Year	Type of Operation	Total No.	Year
1.			6.		
2.			7.		
3.			8.		
4.			9.		
5.			10.		

**SECTION 8 - SMOKING**

Have you ever been a cigarette or pipe smoker? Yes  No

**Cigarette smoking:** Average number of cigarettes smoked per day..... Number of years smoked: .....

Still smoking at present? Yes  No

Year quit.....

**Pipe smoking:** Year started.....

Still smoking at present? Yes  No

Year quit.....

**SECTION 9 - ALCOHOL**

Do you use alcohol on a daily or almost daily basis? Yes  No

If Yes, average number of units per day (1 unit = 1 beer or 1 glass of wine or 1 tot spirits):.....units/day

**SECTION 12 - CURRENT SYMPTOMS (Please answer all questions)**

**Neurological symptoms**

- 1. Epileptic fit or convulsion within the past 3 months Yes  No
- 2. Fainting or black outs within the past 3 months (Cardiac R) Yes  No
- 3. Confused / restless most or all of the time (Delirium R) Yes  No

**Cardiovascular symptoms - Ongoing or within the past 6 months**

- 1. Regular episodes of palpitations (an uncomfortable and worrying awareness of one's own heartbeat) (Cardiac R) Yes  No
- 2. Tightness of the chest or chest pain, specifically with exercise (Cardiac R) Yes  No
- 3. Chest pain of a severe or worrying nature, not related to exercise (Cardiac R) Yes  No
- 4. Constant swelling of lower legs / ankles (Clot R1) Yes  No

**Respiratory symptoms**

- 1. Are you experiencing wheezing or tightness of the chest at present? (Resp R) Yes  No
- 2. Do you experience shortness of breath with minimal exertion, e.g. walking less than 100metres, climbing 1 flight of stairs, etc.? (Resp R) Yes  No
- 3. Do you have continual shortness of breath, even while resting? (Resp R) Yes  No
- 4. Do you use oxygen at home (machine or cylinder)? (Resp R) Yes  No
- 5. Do you use a CPAP machine for obstructive sleep apnoea? (Resp R) Yes  No

**Haematological risks - clotting**

- 1. Have you ever suffered a blood clot to the leg? If Yes, please give details below (Clot R3) Yes  No
- 2. Have you ever suffered a blood clot to the lung? If Yes, please give details below (Clot R3) Yes  No
- 3. Do you have varicose veins (spatare)? (Clot R1) Yes  No
- 4. **Females:** Have you been pregnant or delivered a baby within the past month (Clot R1) Yes  No

**Gastro-intestinal**

- 1. Do you have diarrhoea or severe abdominal cramping at present? Yes  No
- 2. Have you ever been hospitalised or required surgery for a bleeding stomach ulcer? Yes  No

**Other symptoms**

- 1. Are you suffering from flu like symptoms such as fever, muscle pains, etc at the moment? If Yes, please notify your surgeon / anaesthetist. Yes  No
- 2. Do you have any open or septic sores / wounds? If Yes, please notify your surgeon. Yes  No

**FURTHER DETAILS REGARDING THE ABOVE SYMPTOMS, OR OTHER INFORMATION YOU THINK MAY BE IMPORTANT**

.....

.....

.....

.....

.....

.....

Herewith I, ..... I.D. No. ....  
 Confirm that the above information is to be best of my knowledge true and accurate.

Furthermore, I confirm that I take full personal responsibility for all valuables which I choose to keep in my possession.

Signed: ..... Date: .....

**NURSING INITIAL CLINICAL EVALUATION - DAY OF ADMISSION**

**Checklist**

- Pre admissions questionnaire completed by patient      Yes  No
- Personal introduction      Yes  No
- Ward information and patient orientation      Yes  No

**PATIENT CLINICAL EXAMINATION**

**General**

- Calm       Stressed / anxious       Aggressive / agitated

Other: .....

**Cardiovascular Evaluation**

Blood pressure ..... Pulse ..... Temp. ....

Swelling of the legs      Yes  No

Varicose veins      Yes  No

**Respiratory Evaluation**

Respiratory rate ..... breaths/min.

**Neurological Evaluation**

Impairments: Deaf       Blind / Visually impaired       Other: .....

**Intellectual Capacity / Level of Consciousness**

Awake, calm and easily follows instructions

Sleepy, aroused by voice and remains calm

Agitated and restless, difficult to control

Comatose, aroused by painful stimuli

Comatose, no response to pain or voice

Other: .....

**Pressure Area Evaluation**

**PRESSURE AREAS**

	Normal appearance	Cannot be evaluated	Redness of pressure area > 3 seconds	Partial thickness skin loss or blister	Ulcer - full thickness skin
Occiput					
Shoulders					
Elbows					
Hips					
Sacrum					
Heels					
Ankles					
Ears					

**Special Examinations:**

Urine dipstix: Normal       Abnormal       Details: .....

Evaluation done by: ..... Rank: .....

Date: ..... Time: .....

Signed: .....

**SECTION 10 - MOBILITY AND PLACE OF ABODE**

Bedridden     Wheelchair     Walking Frame     Walking Stick     No Restrictions   
 Other: .....  
 House / flat / duplex     Hostel     Retirement Home     Frail Care   
 Other: .....  
 Have you been in a plaster of paris cast or similar cast within the past month or at present? (Clot R2)    Yes     No   
 If Yes, please specify .....  
 Have you been confined to bed for longer than 4 days prior to admission? (Clot R2)    Yes     No   
 Have you suffered a broken leg or pelvis within the past month? (Clot R5)    Yes     No

**SECTION 11 - CHRONIC / PRE-EXISTING ILLNESS OR INJURIES**

**CANCER**    Yes     No

If Yes, please specify below:

1. .... Healed     Ongoing (Clot R)     If healed, in which year: .....
2. .... Healed     Ongoing (Clot R)     If healed, in which year: .....
3. .... Healed     Ongoing (Clot R)     If healed, in which year: .....

**CHEMOTHERAPY?**    Yes     No     If yes, date / year of most recent chemo was completed: .....

**RADIOTHERAPY?**    Yes     No     If Yes, date / year of most recent radiotherapy: .....

**Other chronic disease / injuries of note. If you answer yes to any of the questions, please complete the details in the space provided below.**

- Previous diagnosis / treatment for heart attack? (Clot R1) (Cardiac R)    Yes     No
- Previous diagnosis / treatment for emphysema / chronic bronchitis? (Clot R1) (Resp R)    Yes     No
- Previous diagnosis / treatment for ulcerative colitis or Crohn's disease? (Clot R1)    Yes     No
- Are you receiving treatment for heart failure? (Clot R1) (Cardiac R)    Yes     No
- Have you ever been treated for stroke? (Clot R5) (Del R)    Yes     No
- Are you a paraplegic or quadriplegic? (Clot R5)    Yes     No
- Are you receiving treatment (tablets or injections) for diabetes? If Yes, please specify below    Yes     No
- Do you have a pacemaker?    Yes     No
- Do you suffer from swelling of the legs (daily or almost all the time) (Clot R1)    Yes     No
- Have you ever been treated for kidney disease or diminished kidney functions? If Yes, please give details below    Yes     No
- Are you receiving treatment for any psychiatric illness such as depression, anxiety, bipolar, etc? (Del R) If Yes, please give details below    Yes     No
- Do you suffer from Alzheimers disease or Parkinson disease, if yes, please specify below:    Yes     No
- Have you been admitted to hospital for treatment of a lung illness in the past 30 days if yes, please specify (Clot R1)    Yes     No

**ANY OTHER DISEASE / PREVIOUS INJURY, NOT ALREADY MENTIONED WHICH YOU THINK MAY BE IMPORTANT - PLEASE GIVE DETAILS BELOW.**

1. .... Year diagnosed (±) .....
2. .... Year diagnosed (±) .....
3. .... Year diagnosed (±) .....
4. .... Year diagnosed (±) .....
5. .... Year diagnosed (±) .....
6. .... Year diagnosed (±) .....
7. .... Year diagnosed (±) .....
8. .... Year diagnosed (±) .....

**NURSING EVALUATION - POST ADMISSION RISK ASSESSMENT**

**ALLERGIES**

- 1.....
- 2.....
- 3.....
- 4.....

**CLOTTING EVALUATION**

Caprini score (admission)

**INTERPRETATION**

0 - 1	Low risk	Suggest early mobilisation, no anticoag required
2	Moderate risk	Suggest subcut LMWH if no contra indication
3 - 4	High risk	Suggest subcut LMWH if no contra indication
5 or more	Very high risk	Suggest subcut LMWH + intermittent compression device if no contra indications
Hip and knee surgery		Suggest 2-3 weeks anti coagulation post discharge
Caprini score 10 or more		Consider 2-3 weeks anti coagulation post discharge

**BLEEDING RISKS**

- Disprin / Ecotrin usage within the past week      
 Plavix / clopidogrel usage within the past week      
 Warfarin usage within the past 5 days   
 History of previous excessive bleeding      
 None

**DELIRIUM RISKS**

- Previous psychiatric diagnosis      
 Current / ongoing psychiatric medication      
 Age > 70 years   
 Alcohol use more than 4 tots daily on average      
 Recent epileptic fits / convulsions      
 None

**RESPIRATORY RISKS**

- Weight >125kg male, >100kg female      
 Neck circumference 42cm or more (male)      
 Upper gastro-intestinal surgery   
 Thoracic surgery or placement of IC drain      
 Pre-existing lung disease      
 Age > 70 years   
 History of wheezing / tightness of chest      
 Shortness of breath with minimal exertion      
 Shortness of breath at rest   
 Home oxygen usage      
 Home CPAP for obstructive sleep apnoea      
 None

**CARDIAC RISKS**

- Age > 70 years      
 Previous Cardiac bypass surgery      
 Previous stent   
 Previous angioplasty      
 Fainting / black out history      
 Cardiac failure on treatment   
 Digoxin (Lanoxin) as home medication      
 Cardarone X (Hexarone) as home medication      
 History of palpitations   
 Chest pain - exercise related      
 Chest pain - not related to exercise      
 Previous myocardial Infarct or angina   
 None

**RISKS FOR FALLS**

- Age > 70+ and intravenous infusion      
 Confusion (continual)      
 Confusion (intermittent)   
 Parkinson disease or medication      
 Stroke (previous or current)      
 Walking with aid - walking stick   
 Walking with aid - walking frame      
 Walking with aid - holds on to furniture or railing      
 None

**PRESSURE SORE RISKS - ADMISSION**

- Patient cannot sit on his/her own      
 Patient cannot turn on his/her own      
 Patient not responding to verbal commands - coma, confusion, sedation   
 Urinary catheter      
 Adult nappy for urinary or fecal incontinence      
 Underweight / thin / malnourished / bony prominences   
 Paraplegic / quadriplegic      
 Overweight - male >130kg, female >100kg      
 None

Pressure care chart to be commenced    Yes     No

Nursing risks assessed by:..... Rank:.....

Signature:..... Date:.....

Doctor Name:.....

Signature:..... Date:.....

# **Annexure H:**

## **ACCN results- healthy work environment**

**H.1 Team assessment results (August/September  
2011)**

**H.2 Team assessment results (July 2012)**

**H.3 AACN benchmark report**

## **H.1 Team assessment results (August/September 2011)**



# How to Read Your Feedback Report

## Standard Scores

### STANDARD 1: Skilled Communication

#### Netcare Pretoria East W 10

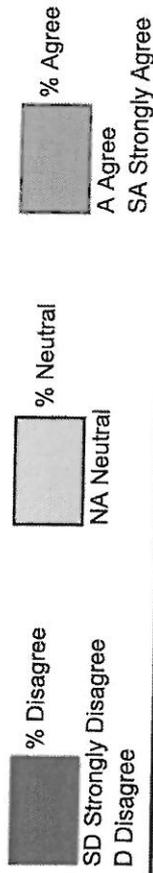
Assessment Date	Responses	Score	SD	D	NA	A	SA
23-Aug-11	17	2.65	22	28	20	28	4

Aggregate Score: 2.65

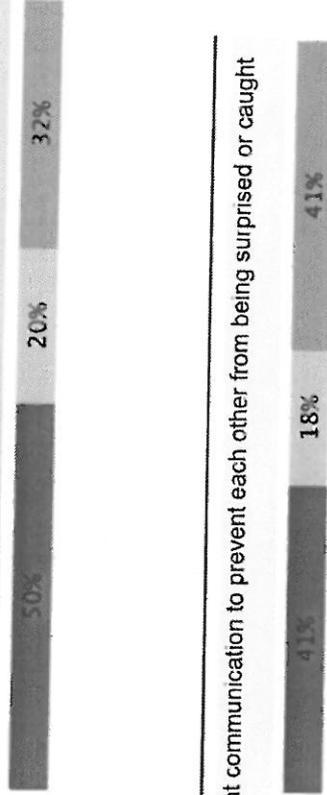
#### Individual Item Scores

Administrators, nurse managers, physicians, nurses and other staff maintain frequent communication to prevent each other from being surprised or caught off guard by decisions.

23-Aug-11	17	2.94	12	29	18	35	6
-----------	----	------	----	----	----	----	---



#### Response Distribution



#### Calculation Notes

**Score:** Represents the mean (average) score on a scale of 1 to 5.

**Percentages:** Rounding may produce percentage values that could differ slightly from 100%.

#### Scoring Guidelines

Please use the following scale to interpret your team's scores for this assessment:

1.00 – 2.99 – Needs Improvement

3.00 – 3.99 – Good

4.00 – 5.00 – Excellent

## Summary Score

The mean score for the entire survey, including all six standards.  
Using the scoring guidelines provided below, evaluate the overall score for this assessment.

### Netcare Pretoria East W 10

Assessment Date	Responses	Score	SD	D	NA	A	SA
23-Aug-11	17	2.9	27	35	16	19	3

### Response Distribution



## Scoring Guidelines

Please use the following scale to interpret your team's scores for this assessment:

- 1.00 – 2.99 – Needs Improvement
- 3.00 – 3.99 – Good
- 4.00 – 5.00 – Excellent

# Standard Scores

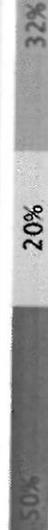
## STANDARD 1: Skilled Communication

Using the scoring guidelines provided with your assessment report, evaluate your team's score for this standard.

*Netcare Pretoria East W 10*

Assessment Date	Responses	Score	SD	D	NA	A	SA
23-Aug-11	17	2.65	22	28	20	28	4

### Response Distribution



**Aggregate Score: 2.65**

### Individual Item Scores

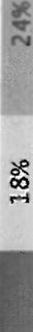
Administrators, nurse managers, physicians, nurses and other staff maintain frequent communication to prevent each other from being surprised or caught off guard by decisions.

23-Aug-11	17	2.94	12	29	18	35	6
-----------	----	------	----	----	----	----	---



Administrators, nurse managers, physicians, nurses, and other staff make sure their actions match their words—they "walk their talk."

23-Aug-11	17	2.35	29	29	18	24	0
-----------	----	------	----	----	----	----	---



Administrators, nurse managers, physicians, nurses, and other staff have zero-tolerance for disrespect and abuse. If they see or hear someone being disrespectful, they hold them accountable regardless of the person's role or position.

23-Aug-11	17	2.65	24	24	24	24	6
-----------	----	------	----	----	----	----	---



### Scoring Guidelines

Please use the following scale to interpret your team's scores for this assessment:

- 1.00 – 2.99 – Needs Improvement
- 3.00 – 3.99 – Good
- 4.00 – 5.00 – Excellent

## Standard Scores

### STANDARD 2: True Collaboration

Using the scoring guidelines provided with your assessment report, evaluate your team's score for this standard.

*Netcare Pretoria East W 10*

Assessment Date	Responses	Score	SD	D	NA	A	SA
23-Aug-11	17	2.18	29	45	6	18	2

#### Response Distribution

74% 6% 20%

Aggregate Score: 2.18

#### Individual Item Scores

Administrators, nurse managers, and physicians involve nurses and other staff to an appropriate degree when making important decisions.

23-Aug-11	17	2.35	24	47	6	18	6
-----------	----	------	----	----	---	----	---

Nurses and other staff feel able to influence the policies, procedures, and bureaucracy around them.

23-Aug-11	17	1.88	41	41	6	12	0
-----------	----	------	----	----	---	----	---

When administrators, nurse managers, and physicians speak with nurses and other staff, it's not one-way communication or order giving. Instead, they seek input and use it to shape decisions.

23-Aug-11	17	2.29	24	47	6	24	0
-----------	----	------	----	----	---	----	---

#### Scoring Guidelines

Please use the following scale to interpret your team's scores for this assessment:

- 1.00 – 2.99 – Needs Improvement
- 3.00 – 3.99 – Good
- 4.00 – 5.00 – Excellent

## Standard Scores

### STANDARD 3: Effective Decision Making

Using the scoring guidelines provided with your assessment report, evaluate your team's score for this standard.

*Netcare Pretoria East W 10*

Assessment Date	Responses	Score	SD	D	NA	A	SA
23-Aug-11	17	2.63	22	31	16	26	6

#### Response Distribution

53% 16% 32%

**Aggregate Score: 2.63**

#### Individual Item Scores

Administrators, nurse managers, physicians, nurses, and other staff are careful to consider the patient's and family's perspectives whenever they are making important decisions.

23-Aug-11	17	2.71	24	24	18	29	6
-----------	----	------	----	----	----	----	---

48% 18% 35%

Administrators, nurse managers, physicians, nurses, and other staff are consistent in their use of data-driven, logical decision-making processes to make sure their decisions are the highest quality

23-Aug-11	17	2.76	18	29	18	29	6
-----------	----	------	----	----	----	----	---

47% 18% 35%

The right departments, professions, and groups are involved in important decisions.

23-Aug-11	17	2.41	24	41	12	18	6
-----------	----	------	----	----	----	----	---

65% 12% 24%

#### Scoring Guidelines

Please use the following scale to interpret your team's scores for this assessment:

1.00 – 2.99 – Needs Improvement

3.00 – 3.99 – Good

4.00 – 5.00 – Excellent

## Standard Scores

### STANDARD 4: Appropriate Staffing

Using the scoring guidelines provided with your assessment report, evaluate your team's score for this standard.

*Netcare Pretoria East W 10*

Assessment Date	Responses	Score	SD	D	NA	A	SA
23-Aug-11	17	2.12	31	43	1E	14	2

Response Distribution

74% 1E+1% 16%

Aggregate Score: 2.12

#### Individual Item Scores

Administrators and nurse managers work with nurses and other staff to make sure there are enough staff to maintain patient safety.

23-Aug-11	17	2	47	24	12	18	0
-----------	----	---	----	----	----	----	---

71% 12% 18%

Administrators and nurse managers make sure there is the right mix of nurses and other staff to ensure optimal outcomes.

23-Aug-11	17	2.24	29	41	12	12	6
-----------	----	------	----	----	----	----	---

70% 12% 18%

Support services are provided at a level that allows nurses and other staff to spend their time on the priorities and requirements of patient and family care.

23-Aug-11	17	2.12	18	65	6	12	0
-----------	----	------	----	----	---	----	---

83% 6% 12%

#### Scoring Guidelines

Please use the following scale to interpret your team's scores for this assessment:

- 1.00 – 2.99 – Needs Improvement
- 3.00 – 3.99 – Good
- 4.00 – 5.00 – Excellent

## Standard Scores

### STANDARD 5: Meaningful Recognition

Using the scoring guidelines provided with your assessment report, evaluate your team's score for this standard.

*Netcare Pretoria East W 10*

Assessment Date	Responses	Score	SD	D	NA	A	SA
23-Aug-11	17	2.18	33	31	20	16	0

Response Distribution



Aggregate Score: 2.18

### Individual Item Scores

There are motivating opportunities for personal growth, development, and advancement.

Assessment Date	Responses	Score	SD	D	NA	A	SA
23-Aug-11	17	2.82	24	12	24	41	0



The formal reward and recognition systems work to make nurses and other staff feel valued.

Assessment Date	Responses	Score	SD	D	NA	A	SA
23-Aug-11	17	1.59	47	47	6	0	0



Administrators, nurse managers, physicians, nurses, and other staff members speak up and let people know when they've done a good job.

Assessment Date	Responses	Score	SD	D	NA	A	SA
23-Aug-11	17	2.12	29	35	29	6	0



### Scoring Guidelines

Please use the following scale to interpret your team's scores for this assessment:

- 1.00 – 2.99 – Needs Improvement
- 3.00 – 3.99 – Good
- 4.00 – 5.00 – Excellent

## Standard Scores

### STANDARD 6: Authentic Leadership

Using the scoring guidelines provided with your assessment report, evaluate your team's score for this standard.

*Nefcare Pretoria East W 10*

Assessment Date	Responses	Score	SD	D	NA	A	SA
23-Aug-11	17	2.51	22	33	24	16	6

#### Response Distribution



Aggregate Score: 2.51

#### Individual Item Scores

Nurse leaders (managers, directors, advanced practice nurses, etc.) are given the access and authority required to play a role in making key decisions.

23-Aug-11	17	2.76	18	24	29	24	6
-----------	----	------	----	----	----	----	---



Most nurses and other staff here have a positive relationship with their nurse leaders (managers, directors, advanced practice nurses, etc.)

23-Aug-11	17	2.29	29	35	18	12	6
-----------	----	------	----	----	----	----	---



Nurse leaders (managers, directors, advanced practice nurses, etc.) demonstrate an understanding of the requirements and dynamics at the point of care, and use this knowledge to work for a healthy work environment

23-Aug-11	17	2.47	18	41	24	12	6
-----------	----	------	----	----	----	----	---



#### Scoring Guidelines

Please use the following scale to interpret your team's scores for this assessment:

- 1.00 – 2.99 – Needs Improvement
- 3.00 – 3.99 – Good
- 4.00 – 5.00 – Excellent

## **H.2 Team assessment results (July 2012)**



**AACN**  
healthy work  
environment  
ASSESSMENT

**Team  
Assessment  
Results**



~~XXXXXXXXXX~~  
~~XXXXXX~~

Juliana De Kock

Survey open date: 2-Jul-12

Survey close date: 31-Jul-12

AMERICAN  
ASSOCIATION  
of CRITICAL-CARE  
NURSES

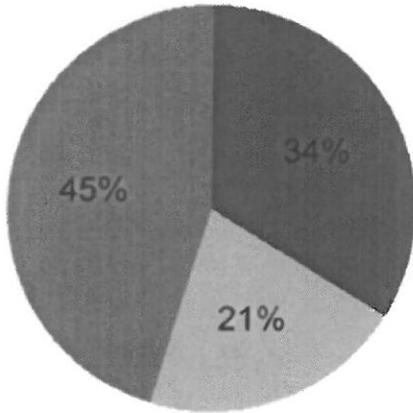


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## Summary Score

The mean score for the entire survey, including all six standards.

Using the scoring guidelines provided below, evaluate the overall score for this assessment.



- Disagree/Strongly Disagree
- Neutral
- Agree/Strongly Agree

	Responses	Percent
Strongly Disagree	41	14.24%
Disagree	57	19.79%
Neutral	60	20.83%
Agree	89	30.90%
Strongly Agree	41	14.24%

Aggregate Score: 3.11  
Total Individual Responders: 16

### Scoring Guidelines

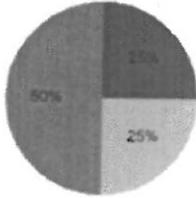
Please use the following scale to interpret your team's scores for this assessment:

- 1.00 - 2.99 - Needs Improvement
- 3.00 - 3.99 - Good
- 4.00 - 5.00 - Excellent

Overall Standard Score - Assessment Date: July 02, 2012

Standard 1 : Skilled Communication: Nurses must be as proficient in communication skills as they are in clinical skills.

Aggregate Score: 3.35



Disagree/Strongly Disagree  
 Neutral  
 Agree/Strongly Agree

	Responses	Percent
Strongly Disagree	3	6.30%
Disagree	9	18.80%
Neutral	12	25.00%
Agree	16	33.30%
Strongly Agree	8	16.70%

Please use the following scale to interpret you team's scores for this assessment:  
 1.00 - 2.99 - Needs Improvement; 3.00 - 3.99 - Good; 4.00 - 5.00 - Excellent

Individual Item Scores

1. Administrators, nurse managers, physicians, nurses and other staff maintain frequent communication to prevent each other from being surprised or caught off guard by decisions.



Score: 3.56

	Responses	Percent
Strongly Disagree	0	0.00%
Disagree	3	18.75%
Neutral	4	25.00%
Agree	6	37.50%
Strongly Agree	3	18.75%

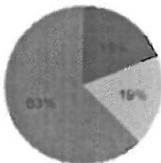
6. Administrators, nurse managers, physicians, nurses, and other staff make sure their actions match their words—they "walk their talk."



Score: 2.75

	Responses	Percent
Strongly Disagree	3	18.75%
Disagree	3	18.75%
Neutral	5	31.25%
Agree	5	31.25%
Strongly Agree	0	0.00%

14. Administrators, nurse managers, physicians, nurses, and other staff have zero-tolerance for disrespect and abuse. If they see or hear someone being disrespectful, they hold them accountable regardless of the person's role or position.



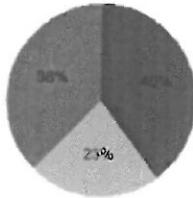
Score: 3.75

	Responses	Percent
Strongly Disagree	0	0.00%
Disagree	3	18.75%
Neutral	3	18.75%
Agree	5	31.25%
Strongly Agree	5	31.25%

Overall Standard Score - Assessment Date: July 02, 2012

Standard 2 : True Collaboration: Nurses must be relentless in pursuing and fostering true collaboration.

Aggregate Score: 2.92



Disagree/Strongly Disagree  
 Neutral  
 Agree/Strongly Agree

	Responses	Percent
Strongly Disagree	10	20.80%
Disagree	9	18.80%
Neutral	11	22.90%
Agree	11	22.90%
Strongly Agree	7	14.60%

Please use the following scale to interpret you team's scores for this assessment:

1.00 - 2.99 - Needs Improvement; 3.00 - 3.99 - Good; 4.00 - 5.00 - Excellent

Individual Item Scores

2. Administrators, nurse managers, and physicians involve nurses and other staff to an appropriate degree when making important decisions.



Score: 3.13

	Responses	Percent
Strongly Disagree	3	18.75%
Disagree	2	12.50%
Neutral	4	25.00%
Agree	4	25.00%
Strongly Agree	3	18.75%

10. Nurses and other staff feel able to influence the policies, procedures, and bureaucracy around them.



Score: 2.88

	Responses	Percent
Strongly Disagree	3	18.75%
Disagree	5	31.25%
Neutral	2	12.50%
Agree	3	18.75%
Strongly Agree	3	18.75%

15. When administrators, nurse managers, and physicians speak with nurses and other staff, it's not one-way communication or order giving. Instead, they seek input and use it to shape decisions.



Score: 2.75

	Responses	Percent
Strongly Disagree	4	25.00%
Disagree	2	12.50%
Neutral	5	31.25%
Agree	4	25.00%
Strongly Agree	1	6.25%

Overall Standard Score - Assessment Date: July 02, 2012

Standard 3 : Effective Decision Making: Nurses must be valued and committed partners in making policy, directing and evaluating clinical care and leading organizational operations.

Aggregate Score: 3.38



Disagree/Strongly Disagree  
 Neutral  
 Agree/Strongly Agree

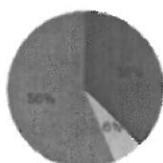
	Responses	Percent
Strongly Disagree	6	12.50%
Disagree	8	16.70%
Neutral	5	10.40%
Agree	20	41.70%
Strongly Agree	9	18.80%

Please use the following scale to interpret you team's scores for this assessment:

1.00 - 2.99 - Needs Improvement; 3.00 - 3.99 - Good; 4.00 - 5.00 - Excellent

Individual Item Scores

7. Administrators, nurse managers, physicians, nurses, and other staff are consistent in their use of data-driven, logical decision-making processes to make sure their decisions are the highest quality.



Score: 3.25

	Responses	Percent
Strongly Disagree	2	12.50%
Disagree	4	25.00%
Neutral	1	6.25%
Agree	6	37.50%
Strongly Agree	3	18.75%

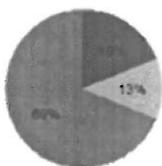
11. The right departments, professions, and groups are involved in important decisions.



Score: 3.25

	Responses	Percent
Strongly Disagree	2	12.50%
Disagree	3	18.75%
Neutral	2	12.50%
Agree	7	43.75%
Strongly Agree	2	12.50%

16. Administrators, nurse managers, physicians, nurses, and other staff are careful to consider the patient's and family's perspectives whenever they are making important decisions.



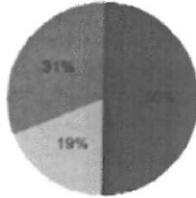
Score: 3.63

	Responses	Percent
Strongly Disagree	2	12.50%
Disagree	1	6.25%
Neutral	2	12.50%
Agree	7	43.75%
Strongly Agree	4	25.00%

Overall Standard Score - Assessment Date: July 02, 2012

Standard 4 : Appropriate Staffing: Staffing must ensure the effective match between patient needs and nurse competencies .

Aggregate Score: 2.89



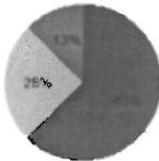
Disagree/Strongly Disagree  
 Neutral  
 Agree/Strongly Agree

	Responses	Percent
Strongly Disagree	10	20.80%
Disagree	14	29.20%
Neutral	9	18.80%
Agree	11	22.90%
Strongly Agree	4	8.30%

Please use the following scale to interpret you team's scores for this assessment:  
 1.00 - 2.99 - Needs Improvement; 3.00 - 3.99 - Good; 4.00 - 5.00 - Excellent

Individual Item Scores

3. Administrators and nurse managers work with nurses and other staff to make sure there are enough staff to maintain patient safety.



Score: 2.19

	Responses	Percent
Strongly Disagree	6	37.50%
Disagree	4	25.00%
Neutral	4	25.00%
Agree	1	6.25%
Strongly Agree	1	6.25%

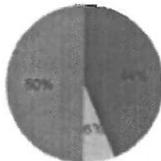
8. Administrators and nurse managers make sure there is the right mix of nurses and other staff to ensure optimal outcomes .



Score: 2.81

	Responses	Percent
Strongly Disagree	2	12.50%
Disagree	5	31.25%
Neutral	4	25.00%
Agree	4	25.00%
Strongly Agree	1	6.25%

12. Support services are provided at a level that allows nurses and other staff to spend their time on the priorities and requirements of patient and family care.



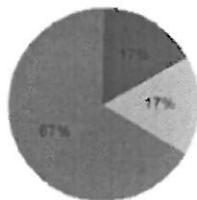
Score: 3.06

	Responses	Percent
Strongly Disagree	2	12.50%
Disagree	5	31.25%
Neutral	1	6.25%
Agree	6	37.50%
Strongly Agree	2	12.50%

Overall Standard Score - Assessment Date: July 02, 2012

Standard 6 : Authentic Leadership: Nurse leaders must fully embrace the imperative of a healthy work environment, authentically live it and engage others in its achievement.

Aggregate Score: 3.67



Disagree/Strongly Disagree  
 Neutral  
 Agree/Strongly Agree

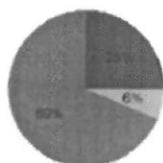
	Responses	Percent
Strongly Disagree	2	4.20%
Disagree	6	12.50%
Neutral	8	16.70%
Agree	22	45.80%
Strongly Agree	10	20.80%

Please use the following scale to interpret you team's scores for this assessment:

1.00 - 2.99 - Needs Improvement; 3.00 - 3.99 - Good; 4.00 - 5.00 - Excellent

Individual Item Scores

5. Most nurses and other staff here have a positive relationship with their nurse leaders (managers, directors, advanced practice nurses, etc.).



Score: 3.69

	Responses	Percent
Strongly Disagree	0	0.00%
Disagree	4	25.00%
Neutral	1	6.25%
Agree	7	43.75%
Strongly Agree	4	25.00%

13. Nurse leaders (managers, directors, advanced practice nurses, etc.) demonstrate an understanding of the requirements and dynamics at the point of care, and use this knowledge to work for a healthy work environment.



Score: 3.63

	Responses	Percent
Strongly Disagree	1	6.25%
Disagree	1	6.25%
Neutral	4	25.00%
Agree	7	43.75%
Strongly Agree	3	18.75%

18. Nurse leaders (managers, directors, advanced practice nurses, etc.) are given the access and authority required to play a role in making key decisions.



Score: 3.69

	Responses	Percent
Strongly Disagree	1	6.25%
Disagree	1	6.25%
Neutral	3	18.75%
Agree	8	50.00%
Strongly Agree	3	18.75%

### **H.3 AACN benchmark report**



**AACN**  
healthy work  
environment  
ASSESSMENT

**Benchmark  
Report**



AMERICAN  
ASSOCIATION  
of CRITICAL CARE  
NURSES

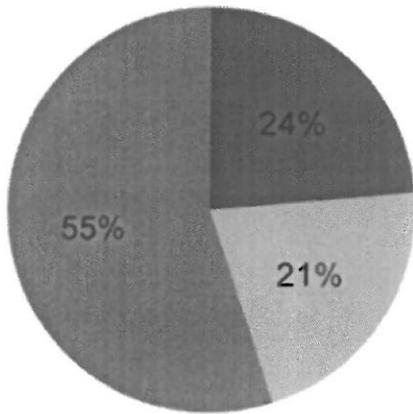


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This report anonymously looks at the entire nationwide database of individual survey responses and generates aggregate scores to provide a benchmark against which you can compare your team's assessments.

### Summary Score

The mean score for the entire survey, including all six standards.  
Using the scoring guidelines provided below, evaluate the overall score for this assessment.



	Responses	Percent
Strongly Disagree	26,862	6.82%
Disagree	66,617	16.91%
Neutral	83,792	21.27%
Agree	174,894	44.39%
Strongly Agree	41,855	10.62%

- Disagree/Strongly Disagree
- Neutral
- Agree/Strongly Agree

Aggregate Score: 3.35  
Total Individual Responders: 21,890

### Scoring Guidelines

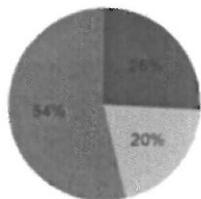
Please use the following scale to interpret your team's scores for this assessment:

- 1.00 - 2.99 - Needs Improvement
- 3.00 - 3.99 - Good
- 4.00 - 5.00 - Excellent

### Overall Standard Score

Standard 1 : Skilled Communication: Nurses must be as proficient in communication skills as they are in clinical skills.

Aggregate Score: 3.31



Disagree/Strongly Disagree  
 Neutral  
 Agree/Strongly Agree

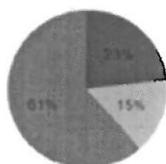
	Responses	Percent
Strongly Disagree	4,873	7.40%
Disagree	12,097	18.40%
Neutral	13,273	20.20%
Agree	28,374	43.20%
Strongly Agree	7,053	10.70%

Please use the following scale to interpret you team's scores for this assessment:

1.00 - 2.99 - Needs Improvement; 3.00 - 3.99 - Good; 4.00 - 5.00 - Excellent

### Individual Item Scores

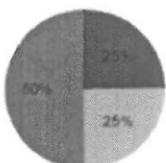
1. Administrators, nurse managers, physicians, nurses and other staff maintain frequent communication to prevent each other from being surprised or caught off guard by decisions.



Score: 3.44

	Responses	Percent
Strongly Disagree	1,167	5.33%
Disagree	3,886	17.75%
Neutral	3,380	15.44%
Agree	11,021	50.35%
Strongly Agree	2,436	11.13%

6. Administrators, nurse managers, physicians, nurses, and other staff make sure their actions match their words—they "walk their talk."



Score: 3.27

	Responses	Percent
Strongly Disagree	1,516	6.93%
Disagree	3,919	17.90%
Neutral	5,454	24.92%
Agree	9,191	41.99%
Strongly Agree	1,810	8.27%

14. Administrators, nurse managers, physicians, nurses, and other staff have zero-tolerance for disrespect and abuse. If they see or hear someone being disrespectful, they hold them accountable regardless of the person's role or position.



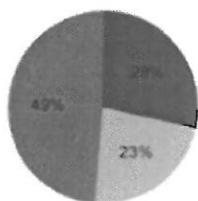
Score: 3.23

	Responses	Percent
Strongly Disagree	2,190	10.00%
Disagree	4,292	19.61%
Neutral	4,439	20.28%
Agree	8,182	37.29%
Strongly Agree	2,807	12.82%

**Overall Standard Score**

**Standard 2 : True Collaboration: Nurses must be relentless in pursuing and fostering true collaboration.**

**Aggregate Score: 3.21**



Disagree/Strongly Disagree  
 Neutral  
 Agree/Strongly Agree

	Responses	Percent
Strongly Disagree	5,043	7.70%
Disagree	13,587	20.70%
Neutral	14,933	22.70%
Agree	26,443	40.30%
Strongly Agree	5,664	8.60%

Please use the following scale to interpret you team's scores for this assessment:  
 1.00 - 2.99 - Needs Improvement;      3.00 - 3.99 - Good;      4.00 - 5.00 - Excellent

**Individual Item Scores**

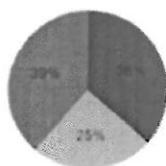
2. Administrators, nurse managers, and physicians involve nurses and other staff to an appropriate degree when making important decisions.



**Score: 3.29**

	Responses	Percent
Strongly Disagree	1,334	6.09%
Disagree	4,584	20.94%
Neutral	4,379	20.00%
Agree	9,520	43.49%
Strongly Agree	2,073	9.47%

10. Nurses and other staff feel able to influence the policies, procedures, and bureaucracy around them .



**Score: 2.98**

	Responses	Percent
Strongly Disagree	2,400	10.96%
Disagree	5,543	25.32%
Neutral	5,480	25.03%
Agree	7,031	32.12%
Strongly Agree	1,436	6.56%

15. When administrators, nurse managers, and physicians speak with nurses and other staff, it's not one-way communication or order giving. Instead, they seek input and use it to shape decisions.



**Score: 3.37**

	Responses	Percent
Strongly Disagree	1,309	5.98%
Disagree	3,460	15.81%
Neutral	5,074	23.18%
Agree	9,892	45.19%
Strongly Agree	2,155	9.84%

**Overall Standard Score**

**Standard 3 : Effective Decision Making:** Nurses must be valued and committed partners in making policy, directing and evaluating clinical care and leading organizational operations.

**Aggregate Score: 3.55**



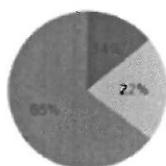
Disagree/Strongly Disagree  
 Neutral  
 Agree/Strongly Agree

	Responses	Percent
Strongly Disagree	2,598	4.00%
Disagree	7,342	11.20%
Neutral	14,457	22.00%
Agree	33,632	51.20%
Strongly Agree	7,641	11.60%

Please use the following scale to interpret you team's scores for this assessment:  
 1.00 - 2.99 - Needs Improvement;      3.00 - 3.99 - Good;      4.00 - 5.00 - Excellent

**Individual Item Scores**

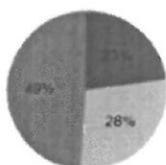
7. Administrators, nurse managers, physicians, nurses, and other staff are consistent in their use of data-driven, logical decision-making processes to make sure their decisions are the highest quality.



Score: 3.59

	Responses	Percent
Strongly Disagree	753	3.44%
Disagree	2,284	10.43%
Neutral	4,720	21.56%
Agree	11,638	53.17%
Strongly Agree	2,495	11.40%

11. The right departments, professions, and groups are involved in important decisions.



Score: 3.28

	Responses	Percent
Strongly Disagree	1,320	6.03%
Disagree	3,666	16.75%
Neutral	6,141	28.05%
Agree	9,066	41.42%
Strongly Agree	1,697	7.75%

16. Administrators, nurse managers, physicians, nurses, and other staff are careful to consider the patient's and family's perspectives whenever they are making important decisions.



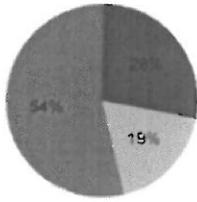
Score: 3.79

	Responses	Percent
Strongly Disagree	525	2.40%
Disagree	1,392	6.36%
Neutral	3,596	16.43%
Agree	12,928	59.06%
Strongly Agree	3,449	15.76%

**Overall Standard Score**

**Standard 4 : Appropriate Staffing:** Staffing must ensure the effective match between patient needs and nurse competencies .

**Aggregate Score: 3.29**



Disagree/Strongly Disagree  
 Neutral  
 Agree/Strongly Agree

	Responses	Percent
Strongly Disagree	5,355	8.20%
Disagree	12,807	19.50%
Neutral	12,164	18.50%
Agree	28,274	43.10%
Strongly Agree	7,070	10.80%

Please use the following scale to interpret you team's scores for this assessment:  
 1.00 - 2.99 - Needs Improvement;      3.00 - 3.99 - Good;      4.00 - 5.00 - Excellent

**Individual Item Scores**

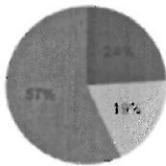
3. Administrators and nurse managers work with nurses and other staff to make sure there are enough staff to maintain patient safety.



**Score: 3.38**

	Responses	Percent
Strongly Disagree	1,892	8.64%
Disagree	3,855	17.61%
Neutral	3,368	15.39%
Agree	9,895	44.29%
Strongly Agree	3,080	14.07%

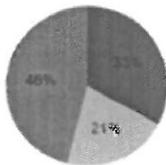
8. Administrators and nurse managers make sure there is the right mix of nurses and other staff to ensure optimal outcomes .



**Score: 3.38**

	Responses	Percent
Strongly Disagree	1,357	6.20%
Disagree	3,883	17.74%
Neutral	4,201	19.19%
Agree	9,988	45.63%
Strongly Agree	2,461	11.24%

12. Support services are provided at a level that allows nurses and other staff to spend their time on the priorities and requirements of patient and family care.



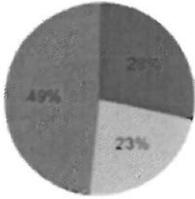
**Score: 3.11**

	Responses	Percent
Strongly Disagree	2,106	9.62%
Disagree	5,069	23.16%
Neutral	4,595	20.99%
Agree	8,591	39.25%
Strongly Agree	1,529	6.98%

**Overall Standard Score**

**Standard 5 : Meaningful Recognition:** Nurses must be recognized and must recognize others for the value each brings to the work of the organization.

**Aggregate Score: 3.22**



Disagree/Strongly Disagree  
 Neutral  
 Agree/Strongly Agree

	Responses	Percent
Strongly Disagree	5,675	8.60%
Disagree	12,960	19.70%
Neutral	15,034	22.90%
Agree	25,353	38.60%
Strongly Agree	6,848	10.10%

Please use the following scale to interpret you team's scores for this assessment:  
 1.00 - 2.99 - Needs Improvement;      3.00 - 3.99 - Good;      4.00 - 5.00 - Excellent

**Individual Item Scores**

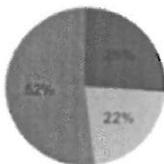
4. The formal reward and recognition systems work to make nurses and other staff feel valued .



Score: 2.96

	Responses	Percent
Strongly Disagree	2,569	11.74%
Disagree	5,483	25.06%
Neutral	5,875	25.93%
Agree	6,506	29.72%
Strongly Agree	1,657	7.57%

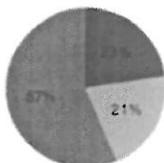
9. Administrators, nurse managers, physicians, nurses, and other staff members speak up and let people know when they've done a good job.



Score: 3.30

	Responses	Percent
Strongly Disagree	1,464	8.69%
Disagree	4,186	19.12%
Neutral	4,805	21.95%
Agree	9,203	42.04%
Strongly Agree	2,232	10.20%

17. There are motivating opportunities for personal growth, development, and advancement.



Score: 3.39

	Responses	Percent
Strongly Disagree	1,642	7.60%
Disagree	3,291	15.03%
Neutral	4,554	20.80%
Agree	9,644	44.06%
Strongly Agree	2,759	12.60%

**Overall Standard Score**

**Standard 6 : Authentic Leadership:** Nurse leaders must fully embrace the imperative of a healthy work environment, authentically live it and engage others in its achievement.

**Aggregate Score: 3.52**



Disagree/Strongly Disagree  
 Neutral  
 Agree/Strongly Agree

	Responses	Percent
Strongly Disagree	3,318	5.10%
Disagree	7,824	11.90%
Neutral	13,931	21.20%
Agree	32,818	50.00%
Strongly Agree	7,779	11.80%

Please use the following scale to interpret you team's scores for this assessment:  
 1.00 - 2.99 - Needs Improvement;      3.00 - 3.99 - Good;      4.00 - 5.00 - Excellent

**Individual Item Scores**

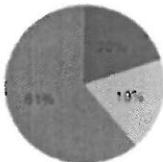
5. Most nurses and other staff here have a positive relationship with their nurse leaders (managers, directors, advanced practice nurses, etc.).



Score: 3.50

	Responses	Percent
Strongly Disagree	1,279	5.84%
Disagree	3,023	13.81%
Neutral	4,066	18.57%
Agree	10,514	48.03%
Strongly Agree	3,008	13.74%

13. Nurse leaders (managers, directors, advanced practice nurses, etc.) demonstrate an understanding of the requirements and dynamics at the point of care, and use this knowledge to work for a healthy work environment.



Score: 3.47

	Responses	Percent
Strongly Disagree	1,260	5.76%
Disagree	3,031	13.85%
Neutral	4,251	19.42%
Agree	10,930	49.93%
Strongly Agree	2,418	11.05%

18. Nurse leaders (managers, directors, advanced practice nurses, etc.) are given the access and authority required to play a role in making key decisions.



Score: 3.58

	Responses	Percent
Strongly Disagree	779	3.56%
Disagree	1,770	8.09%
Neutral	5,614	25.65%
Agree	11,374	51.96%
Strongly Agree	2,353	10.75%

# **Annexure I:**

## **Reflections and review December 2012**

**I.1 Example of nurses' written answers**

**I.2 Letter from the physician**

## **I.1 Example of nurses' written answers**

Ward 10

What was your best experience the past months in the CCU?

- much more pleasant atmosphere
- team work and support of each other
- To have a caring shiftleader, ICU co-ordinator and the doctors support

If you are given an opportunity to wish something for the nurses what will it be?

- To ensure that everyone is updated has the knowledge and skills for ICU work and for the new nurses not to be afraid to ask for help and knowledge
- Regular in-service training
- More recognition and appreciation from management

If you are given an opportunity to wish something for the unit what will it be?

- a full time CNS or unit manager who will continue the support of staff for quality care
- stop all other staff from smoking outside the unit which is supposed to be for ward 10 staff only

If you are given an opportunity to wish something for your patient what will it be?

- Respect and adhere to patient's rights
- Implement and enforce the DNAR or patient's living wishes.
- A pain free and dignified end stage where family is allowed to be with patient.
- Optimal care and privacy.
- Bring back special mattresses to reduce bedsores (Hospital to have them on hospital equipment stock)

## **I.2 Letter from the physician**

 (seen)

Geagte Mnr Rood

Met die nuwe jaar al weer in volle swang, en die afgelope vakansietyd ver in die vergetelheid, voel ek genoodsaak om 'n paar punte met u te deel:

Eerstens wens ek u en die bestuur alles wat mooi is toe vir die jaar 2012 - ek glo dat ons samewerking sal voortgaan, en dat dit 'n suksesvolle jaar vir almal betrokke by Pretoria Oos Hospitaal sal wees

Tweedens wil ek graag met hierdie skrywe u en die bestuur en veral die Personeel van sale 10 en 11 komplimenteer met die wyse waarop die afgelope Desembermaand verloop het, veral met verwysing na die hantering van pasiente in die intensiewe en hoe sorg eenhede. Ek is van die opinie dat dit dikwels nie maklik is vir personeel om te ontwortel vir bykans 'n maand en uit die bekende eenhede te trek, om skoene te gaan volstaan in 'n ander eenheid in die hospitaal nie. Dit was redelik druk by tye op spoed, maar daar was met enkele klein uitsonderings nooit enige probleme met opname en bahnadeling van kritiek siek pasiente nie.

Ek is onder die indruk dat die organisasie van die eenheid goed hanteer was (met die volgehoue Insette van Dr Tommy Gray en Sr Juliana De Kock) die personeel grootliks goed bestuur is en waar nodig, tydig hulp ingewin is om enige krisis te kon hanteer.

8 jaar van Desemberdiens het ek een van die beste feesgetye ooit beleef as internis by die hospitaal, en derhalwe voel ek genoopt om dit onder u aandag te bring.

My wens vir 2012 is dat dit so sal voortgaan, met 100% samewerking van ons almal

Beste groete

Elizna Coetzer  
MBChB, FCP(SA)

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# **Annexure J:**

## **Ownership documentation**

**J.1 Ownership list**

**J.2 Invitation to deputy nursing service manager**

## **J.1 Ownership list**

WARD ICU		
PERSONNEL OWNERSHIPLIST		
DUTIES	1 <sup>ST</sup> NAME	2 <sup>ND</sup> NAME
SHE REP (HEALTH & SAFETY)	KASHI	NATASHA
IPC (INFECTION CONTROL)	ELANA	INGRID
TOUCH TEAM	LARA	HANNEKE
EQUIPMENT	OUMA	
FRIDGE	LARA	PATRICIA
IN-SERVICE TRAINING	HANNEKE	ESTHER
QUALITY	ELMARIE	
MOCK RESUS	HANNEKE	PATRICIA
INCIDENTS	STEPHINA	
DRUGS AND BOOKS	TUMI	ESTHER
OFF DUTIES	ELMARIE	
BEST CARE ALWAYS	ANNA	ELANA
AUDITS	MARIETA	OUMA
HANDS ON, FAD	PA	KASHI

**DUTIES"**

- SHE REP


- IPC duties


**TOUCH TEAM:**

- Organise the nomination for carer of the month

**QUALITY IMPROVEMENT:**

- CSI:


**MOCK RESUS**

**INCIDENTS**

**DRUGS AND BOOKS**

**OFF DUTIES**

**BEST CARE ALWAYS:**

- Check if every patient has a BCA check list: CVP, catheter , ventilator, surgical site




**AUDITS:**

- **DOCUMENTATION**
- **IV**
- **ID**
  
- **NETCARE**

**HANDS ON + FAD**

## **J.2 Invitation to deputy nursing service manager**

**Juliana de Kock**

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**From:** Juliana de Kock

**Sent:** 08 December 2011 10:28 AM

**To:** Delina Mothiba

**Subject:** OWNERSHIP WARD 📧

Dear Delina

We want to update the ownership list. If there is anything you want to add please free and do so!

Regards

Juliana and ward 📧

# **Annexure K:**

## **Continuous development programme**

**K.1 Invitation to participate**

**K.2 Proposed CPD programme**

**K.3 Example of CPD modules**

**K.4 Updated status of nurses' CPD progress**

## **K.1 Invitation to participate**

Dear.....

This is a personal invitation to join us on a journey to clinical excellence.

To ensure that we are all confident and competent and to know what is expected from us we are going to run an in-service training program.

Information related to critical care nursing will be provided every two weeks and will be available in the units for two weeks. During the two weeks you can ask the unit manager, the CNS and the CF about the topic or to clarify information you don't understand. Then you will write a multiple choice test for which you have to obtain 85%. (From experience in the critical care environment we found that lectures are not efficient and we regard this approach as adult learning and to help you to update your competency).

After you have passed the test, you can be evaluated on this topic at any time, planned or unplanned. If you don't pass the test, you can rewrite the test. The first topic that we will cover is **SAFE ENVIRONMENT**.

We will keep all your results on your personal in-service training file and you may use it as part of your evidence that you are competent working in the critical care unit. If you have suggestions for topics please let us know.

Please regard it as an effort to provide our patients with the best care possible and to help us to progress to be known as units of excellence.

Regards

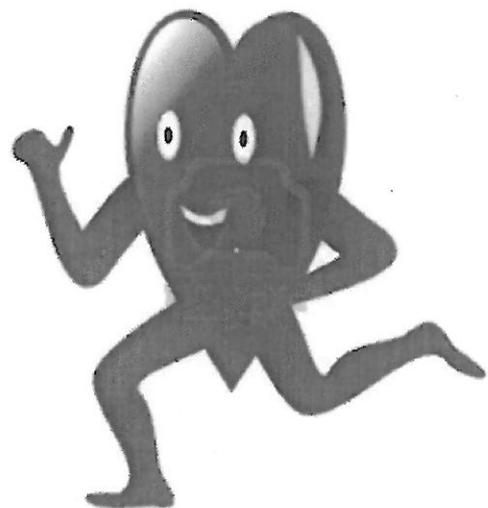
Juliana de Kock, Elmarie de Klerk, Miemie Hanekom.

## **K.2 Proposed CPD programme**



## **K.3 Example of CPD modules**

**Cardiac monitoring: Novice – Module 1**  
**Basic cardiovascular anatomy and physiology**



**Objective:**

- After the novice nurse in the critical care unit has completed cardiac monitoring: Module 1, s/he will demonstrate an understanding on basic cardiac vascular anatomy and physiology.
- If the novice nurse demonstrates an understanding of the basic cardiovascular anatomy and physiology she can continue with cardiac monitoring: Module 2.

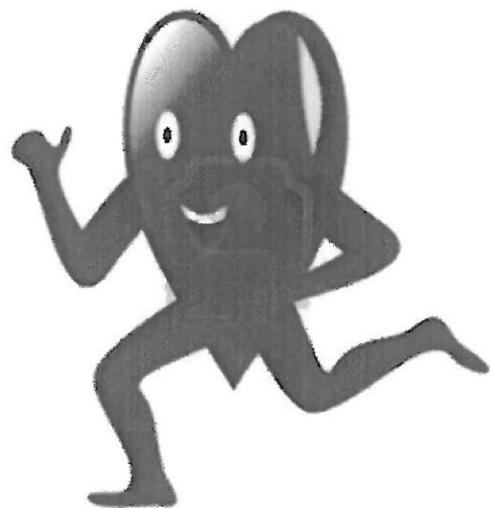
## Cardiac monitoring: Novice – Module 2



**Objective:**

- After the novice nurse in the critical care unit has completed cardiac monitoring: Module 2, s/he will demonstrate an understanding on cardiac monitoring.
- After the novice nurse has completed Module 2, s/he continues with cardiac monitoring: Module 3.

**Cardiac monitoring: Novice – Module 3**  
**Preparation to insert an CVP and A line**



## **Cardiac output: Competent**

Please complete the *Heart and cardiac output booklet* and submit to the clinical facilitator.

### **Purpose:**

Daily critical care nurses have to take decisions about patients' cardiac output and adjust their treatment. It is of vital importance to have evidence on which these decisions are based to ensure correct nursing prescription.

### **Goal:**

Competent critical care nurses have to demonstrate an understanding of cardiac output and make an accurate nursing diagnosis related to the cardiac output of a critically ill patient.

The following data will be evidence to help you to make a patient specific and accurate nursing diagnosis related to patients cardiac output.

If you need any assistance please contact me!

Juliana de Kock

Ext 8619 / # 7957

## **Cardiac output: (Advanced to expert)**

Before you can attempt this part of in-service training you have to submit the completed cardiac output booklet to the clinical facilitator.

### **Purpose:**

Daily shift leaders have to take decisions about patients' cardiac output and adjust their treatment. It is of vital importance to have evidence on which these decisions are based to ensure correct nursing prescription.

### **Goal:**

Shift leaders have to demonstrate an understanding of cardiac output and make an accurate nursing diagnosis related to the cardiac output of a critically ill patient.

The following data will be evidence to help you to make a patient specific and accurate nursing diagnosis related to patients cardiac output.

If you need any assistance please contact me!

Juliana de Kock

Ext 8619 / # 7957

**K.4 Updated status of nurses' CPD progress**

Dear ward 🍷

Our first in-service training topic is almost done!!! Just a few of you still have to write the test. Thank you for your positive attitude and I really hope that it will enhance your competency level and that we will ensure the best outcomes for our patients!!! **Well done!!**

**Alarms are not there to tell you it happened, it is there to warn you that something is busy changing and need your attention! A safe environment ensures prompt action in an emergency!!!**

Common mistakes in the test about the safe environment:

**The saturation alarm:** We first set the alarm 2 above or below the current value and if it became a nuisance alarm you can adjust!! Remember, it first happens to your patient then the monitor alarms!

**The tidal volume alarm's** guideline is 50 – 100ml above or below the current measurements and then the same principle count when it became a nuisance alarm – adjust!

**Apnea alarm:** If you set it at 15 seconds the ventilator will alarm at a breathing rate of four!! This is according to me not a safe alarm setting! Preferably it is set at 10 Seconds.

**The next topic is cardiac monitoring with the emphasis on Cardiac output!**

**Please study the booklet and complete the quizzes as it will give you background to the information that follows in the coming months!**

**Remember to contact me if you have any questions!**

**Juliana de Kock**

# Cardiac monitoring feedback

Dear ward 🍀

I have only received Marieta's and Elmarie's cardiac monitoring booklets back. Please submit your booklets before the end of the week or if not on duty as soon as possible.

Regards

Juliana de Kock

P.S. If your booklet is lost or full of coffee marks, please let me know that it can be sorted!

**WARD ■: Status of in-service training updated 23rd November 2012**

Name:	SE	CM (basic)	CM (Advanced)	ABG	ABG (Advanced)
N 1 Resigned	Done	Done	Done	Done	Received
N 2 Resigned	Done	Done	Done	Done	Received
N 3	Done	Received			
N 4	Received	Received			
N 5 (Critical care student)	Done				
N 6	Done	Done	Done	Done	Received
N 7	Received				
N 8	Done	Received			
N 9	Done	Done	Done	Done	Received
N 10 Resigned	Done	Done	Done	Done	Received
N 11	Done	Done	Done	Done	Received
N 12	Done	Done	Received		
N 13 ( Transferred to another CCU)	Done				
N 14 Resigned	Done				
N 15 Resigned	Done				
N 16 (Critical care student)	Done				
New appointment	Received				
New appointment	Done	Received			
New appointment	Done	Received			
New appointment	Received				
New appointment	Done	CM Module 2			
New appointment	Received	CM Module 2			

SE: Safe Environment  
 CM: Cardiac monitoring  
 ABG: Arterial Bloodgas analysis

**WARD 10: Personnel CPR list**

Name:	BLS	ACLS	ITLS	PALS
Elmarie de Klerk	Valid 01/2014	To be confirmed		
Marieta du Plessis	Valid 04/2014	To be confirmed		
Kashi Dwarika	Valid 07/2014	To be confirmed		
Stephina Nyembe	Valid 04/2012	Valid 10/2013	03/2015	
Natasha Wallace	Valid 07/2012	Valid 11/2013	03/2015	
Anna Tema	Valid 03/2014	To be confirmed		
Lara Kruger	Valid 07/2014			
Ingrid Mzisa	Valid 01/2014	5+6 March		
Esther Kgage	Resigned			
Patricia Khoza	Resigned			
Tumi Mohare	Resigned			
Ramaesela Bagana	Valid 04/2013			
Hope Thlathla	Maternity leave			
<b>Students:</b>				
Hanneke Beyers	Valid 02/2014	Valid 06/2014		
Elana Odendaal	Valid 02/2014	Valid 06/2014		

# **Annexure L:**

## **Patients rounds**

**L.1 Planned dates for patient rounds**

**L.2 Summary of a patient round**

**L.3 Comments on patient rounds**

## **L.1 Planned dates for patient rounds**



## **L.2 Summary of a patient round**

## Summary of patient round: Ward 4<sup>th</sup> June 2012

### **Follow up on Patient with Guillain-Barré**

Patient showed improvement. She began to move her legs and arms and she had own breathing efforts. She was still ventilated.

She had no new complications and the treatment plan was still focused on the prevention of the identified risks as discussed on first patient round.

### **Contribution from dieticians:**

The dieticians brought to our attention the importance of Dipeptivan and Glutamed.

Dipeptivan and glutamed are very important in treating the critically ill patient as glutamine is a conditionally essential amino acid that becomes an essential amino acid in a stress situation. Oral glutamed helps with gut integrity and immunity. It is also strongly advised to continue with dipeptivan and glutamed in the wards if the patients CRP are still high.

The dieticians also stated that a total protein blood result would be of more value related to the patients' nutritional status than the albumin blood result. Dr Gray committed to request total protein to be done at his long term patients.

### **Contribution physiotherapist**

The patient mobilised successfully the previous weekend. She also mentioned that because of the disease process if a patient is complaining of heavy and tired arms the respiratory muscles are the next in line to be affected.

Dr Gray wanted to know if nurses still need to do pressure care when patients lie on the nimbuss mattress. He stated that there is always a risk of accidental extubation when turning a patient. The clinical facilitator would do a literature search regarding this matter.

The literature search revealed that patients even if they are lying on a nimbuss mattress for pressure relieving have to be assessed individually and if their pressure areas are red and at risks, they should be turned accordingly.

Summary compiled by Juliana de Kock June 2012

Read and approved by Dr T Gray

## Summary of patient round: Ward ● 18<sup>th</sup> June 2012

Patient with Respiratory failure – known COPD

The patient's journey was discussed from pre-admission until the 18<sup>th</sup> June 2012

### Risks:

- **Pre-admission:**

Diagnosed with COPD

Smoking

Respiratory infections

- **Being admitted in the critical care unit:**

- Risk for ventilator associated pneumonia (VAP)
- Risk for central line associated bloodstream infection (CLABSI)
- Risk for catheter associated urinary tract infection (CAUTI)
- Risk for deep vein thrombosis (DVT)

***Especially with COPD patients as they have a high hematocrit***

- Risk for pressure ulcers
- Risk for malnutrition

***Especially with COPD patients - they are commonly admitted with malnutrition.***

***Respiratory difficulty has a high metabolic demand.***

- Risk for ventilator induced lung injury
- Risk for auto – peep

### Complications

Since admission the patient complicated with broncho spasm and atrial fibrillation

The patient was ventilated and his ventilation needs were discussed in comparison with the ventilation needs of the Guillian Barre patient.

The biggest difference between the two patients was that ventilation for this patient was needed because of broncho-constriction and impaired gas exchange and not only supportive as the case with the Guillain Barre patient.

This patient needed continuous nebulisation and unnecessary suctioning had to be avoided as it might worsen the broncho spasm.

**Discussion followed about determining the need for suctioning:**

- Coughing
- Crepitations on auscultation
- Visible secretions
- Deteriorating of blood gasses

**The decision was to limit the suctioning to once a day**

**Prevention of risks as with previous patient rounds**

**In addition the prevention of auto-peep was discussed.**

To prevent auto-peep one has to ensure that the volume waveform returns to the baseline with exhalation

**If not:**

- Increase the exhalation time by decreasing the inspiratory time
- Decrease the breathing rate if the patient is set on a high rate
- Do blood gasses for PaCO<sub>2</sub> monitoring
- Determine the auto-peep by using the ventilators intrinsic peep function

The dietician took care of the patient's increased metabolic demand.

Summary compiled by Juliana de Kock June 2012

Read and approved by Dr T Gray

## **L.3 Comments on patient rounds**

**Juliana de Kock**

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**From:** Astrid Engelbrecht  
**Sent:** 07 August 2012 02:52 PM  
**To:** Juliana de Kock; T J Gray; Delina Mothiba; Miemie Hanekom; Michael Seleke; PE-Dietician; pe-ward7; Leatitia Spoelstra; arlene@lantic.net; vangerd@medi.co.za; Elana.Pavkovich@vodamail.co.za; Rozelle Maseko; Bambi Booyesen; Leonore De Jager; Marietjie Cooper  
**Subject:** RE: Patient round ward 📧  
Juliana

I want to thank you for the initiation of these rounds, the feedback has only been hugely positive.

I am going to send the list to all the UM, if they maybe have staff that wants to get involved.

Sr A

---

**From:** Juliana de Kock  
**Sent:** 07 August 2012 11:19 AM  
**To:** T J Gray; Delina Mothiba; Miemie Hanekom; Michael Seleke; PE-Dietician; pe-ward7; Leatitia Spoelstra; Astrid Engelbrecht; arlene@lantic.net; vangerd@medi.co.za; Elana.Pavkovich@vodamail.co.za; Rozelle Maseko; Bambi Booyesen; Leonore De Jager; Marietjie Cooper  
**Subject:** Patient round ward 10

Dear All

The next patient round is scheduled for Monday, 13<sup>th</sup> August 2012.

Attached the planned patient rounds for 2012

**Venue:** Ward 📧

**Time:** 07:00 – 08:00

Kind regards

Juliana de Kock

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**Juliana de Kock**

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**From:** Astrid Engelbrecht  
**Sent:** 20 August 2012 09:02 AM  
**To:** Aniesha Ismail; Anneke Reyneke; Beronise April; Christine Pienaar; Delina Mothiba; Elize Jamneck; Elize Park; Erna Visagie; Hester Van Der Westhuizen; Hilda Booysen; Judy Van den Berg; Lieze Roets; Magriet Combrink; Marianna Grobler; Marietha Rheedder; Michael Seleke; Miemie Hanekom; Natasha Wallach; Paula Thwala; pe-ward19; pe-ward6; pe-ward7; Poppie Fourie; Rita de Beer; Rowan Robinson; Sharon Smit; Tania Dinwoodie  
**Cc:** Juliana de Kock  
**Subject:** FW: Summary patient round 13th August 2012

Dear all

Please see the clinical rounds feedback received from Sr Juliana

I would like to thanks her again for driving this – as this is contributing to the clinical up skilling of our staff (and we become more compliant on the requirements of our Clinical governance obligations)

Astrid

---

**From:** Juliana de Kock  
**Sent:** 20 August 2012 08:54 AM  
**To:** Delina Mothiba; Leatitia Spoelstra; PE-Dietician; pe-ward11; vangerd@medi.co.za; Elana.Pavkovich@vodamail.co.za; Linda Holtzhausen; T J Gray; Bambi Booysen; Astrid Engelbrecht; arlene@lantic.net; Rozelle Maseko; Faith Mabuza; Leonore De Jager; Monika Botha; Marietjie Cooper  
**Subject:** Summary patient round 13th August 2012

Regards

Juliana de Kock

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# **Annexure M:**

**Curriculum vitae of the researcher**

**Curriculum vitae of:**  
Juliana de Kock

**Home Address:**  
221 Peacehaven Street  
Rietvalleirand  
Pretoria  
0181

**Telephone numbers:**  
012 3451642  
Cell +27828703467

**Personal biography**

<b>Surname:</b>	de Kock
<b>Christian names:</b>	Juliana
<b>Gender:</b>	Female
<b>Date of birth:</b>	18 May 1961
<b>Identity number:</b>	6105180075088
<b>Marital status:</b>	Married
<b>Dependants:</b>	Two (daughter and son)
<b>Language proficiency:</b>	English and Afrikaans
<b>Home language:</b>	Afrikaans
<b>Criminal record:</b>	None
<b>Health:</b>	Excellent

## **Educational Qualifications**

**Last school:** High school Piet Potgieter (Potgietersrus)  
**Highest standard:** Standard 10 (Grade 12)  
**Achievements:** University exemption

## **Tertiary Qualifications**

**Institution:** SG Lourens College (Pretoria)  
**Period:** January 1979 to June 1982  
**Qualification:** Diploma in General Nursing and Midwifery  
**Achievements:** Top performance award Anatomy 1979  
House Committee 1980  
"Adjunk- Primaria" 1981  
"Matrones wisseltrofee vir mees verdienstelike student vandie jaar" 1981.

**Institution:** Pretoria Academic Hospital  
**Period:** March 1983 to February 1984  
**Qualification:** Diploma in Intensive Care Nursing

**Institution:** Wes Koppies Hospital  
**Period:** March 1985 to February 1986  
**Qualification:** Diploma in Psychiatric Nursing  
**Achievements:** Best student in practical nursing

**Institution:** Pretoria Technicon  
**Period:** January 1987 to December 1988  
**Qualification:** Diploma in Community Health Nursing

**Institution:** UNISA  
**Period:** January 1993 to December 1996  
**Qualification:** BA Cur: Nursing Administration and Education  
**Achievements:** Nursing Education cum laude

**Institution:** University of Pretoria  
**Period:** January 2003 to December 2004  
**Qualification:** M Curr Clinical

**Institution:** Claassen & Claassen  
**Period:** April 2011  
**Qualification:** Basic Life Support Instructor

**Institution:** H.e.a.r.t Solutions  
**Period:** March 2011  
**Qualification:** Assessor

### **Qualification in progress**

**Institution:** University of South Africa  
**Period:** January 2008 to December 2012  
**Qualification:** **DLitt et Phil (Health studies)**

### **Employment History**

**Employer:** **Pretoria Academic Hospital (HF Verwoerd)**  
**Period:** 1 January 1979 to 30 April 1988  
**Position:** From student nurse to Senior Nursing Sister  
**Duties:** Cardio vascular intensive care (Ward 12 ICU)  
**Reason for leaving:** Better position in private industry

**Employer:** **Medforum Hospital**  
**Period:** 1 May 1988 to 28 February 1997

**Position:** Unit manager: Cardio Thorax ICU ward (1988-1991)  
Area manager: Intensive care units -Cardiology, Cardio thorax surgery (1991 - 1994)  
Clinical facilitator for specialized cardiology and thorax surgery (1994)  
Senior nursing sister - night duty 25 hours (until February 1997)

**Reason for leaving:** Raising a family. Better work conditions (20 hours night duty)

**Employer:** [REDACTED]

**Period:** 1 July 1997 to 19 January 2011

**Position:** Senior Nursing Sister night duty (20 hours)

**Duties:** Shift leader in general surgical intensive care unit

**Period:** 19 January 2011 to current

**Position:** Clinical facilitator – Critical Care

**Position:** [REDACTED] **Education Gauteng North East Campus**

**Period:** 4 May 2012 to August 2012

**Position:** Part time lecturer Critical Care Elementary course

# **Annexure N:**

## **Focus group documentation**

**N.1 Attendance register**

**N.2 Feedback from deputy nursing service manager**

**N.3 Copy written answers participants**

## **N.1 Attendance register**



NETCARE TRAINING REGISTRATION FORM

Course Title: Focus group Course Code: \_\_\_\_\_  
 Training provider: \_\_\_\_\_ Provider Code: \_\_\_\_\_  
 Duration: \_\_\_\_\_ Date: 13/10/11  
 Hospital Site: Pretoria East (7) Skills lab  
 Cost p/p: \_\_\_\_\_ Total Cost: \_\_\_\_\_

	Employee Number	ID Number	Surname	Name	Signature
1	000200180	380901055208	[Redacted]	[Redacted]	[Signature]
2	0002069277	721130020080	[Redacted]	[Redacted]	[Signature]
3	0070100231	68112200070876	[Redacted]	[Redacted]	[Signature]
4	0000320134	70310043087	[Redacted]	[Redacted]	[Signature]
5	1010000		[Redacted]	[Redacted]	[Signature]
6	1010000181	581010137082	[Redacted]	[Redacted]	[Signature]
7	0002055621	72013557084	[Redacted]	[Redacted]	[Signature]
8	0002068600	820302020087	[Redacted]	[Redacted]	[Signature]
9					
10					

Name & Surname: JULIANA DE KOCK Training Co-ordinator  
 Signature: [Signature]

Note: Please send the Registration Form along with the invoices, within 7 days of completion of the training to the e-mail below. Please keep the signed attendance register(s) in your office for record keeping.  
 011 502 7048  
[trainingregister@netcare.co.za](mailto:trainingregister@netcare.co.za)

## **N.2 Feedback from deputy nursing service manager**

**Juliana de Kock**

---

**From:** Delina Mothiba  
**Sent:** 17 October 2011 12:26 PM  
**To:** Juliana de Kock  
**Subject:** RE: Attendance focus group 13 October 2011  
Good Day

This really went so well good luck

Regards  
Delina

---

**From:** Juliana de Kock  
**Sent:** 17 October 2011 09:28 AM  
**To:** pe-pa10  
**Cc:** Delina Mothiba  
**Subject:** Attendance focus group 13 October 2011

Dear ward 10!

Thank you for attending the focus group on Thursday! Thank you for your time and your participation!

I don't actually know how to thank you! Please keep up "The ward ten touch"!!

Regards

Juliana

---

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## **N.3 Copy written answers participants**

### Strengths

1. What are we as nurses working in ICU doing really well?

Profs  
Dedicated  
Competent  
Holistically Care

Caring  
Shrive to best  
care

quality  
nursing care

2. What are our greatest assets? What are we known for in ICU?

"Ward to touch" - Dr. E. Coe  
Hard working, Ownership of our unit  
Dedication, Proud of our work  
Preserving patient's life.

3. What are we most proud of accomplishing?

Best quality care  
Competent personnel.  
Patients talk about the unit long after discharge.

4. What do our strengths tell us about our skills?

Highly competent  
Not afraid to share information.

5. What are our strengths in the environment we work in?

Adaptability.  
Goal focused

## Opportunities

1. How do we collectively understand outside threats?

- Doctors Complaints
  - Management Complaints
  - NO appreciation
  - Patients Complaints
- } Demotivation.

2. How can we reframe to see the opportunities?

- By taking any demotivation and put it in to a positive, so that we can improve.

3. What does the employer ask of you to do?

- Team work
- Best care always
- Competency
- Hard working
- Dedication

4. What does the client (patient) ask of you to do?

- Quality care, skilled nurse
- Friendliness
- Trust

5. How can we best partner with the multi-disciplinary team?

- Open mind
- Acceptance of each other functioning as a team.
- Ownership -

### Results

1. What are our measurable results for:

a) The client (patient)

- Satisfaction

- Discharge from car.

b) The nurse

- Healthy pt.

- Relationship good

SE  
Nurse<sup>3</sup>  
PC

actually the team

VOC

c) The environment

- Appealing
- Friendly
- Receptive

2. What do we want to be known for?

Center of Excellence. & competency

3. How can we make our strengths visible?

- Pt care.
- Reach out -
- ~~Pub~~ Publicity by marketing
- Attitude - play

4. How can we make our opportunities visible?

- Publicity
- Marketing

Focus for the week.

## Aspirations

1. Considering our strengths and opportunities, who should we become?

Team will be highest skilled and high level of caring, being both professional and warm.

2. How do we allow our values to drive our vision?

By living to meet our values

- Participation
- Caring
- Trust
- Honestly
- Truth, Dignity.

3. How can we make a difference to:

3.1 Our clients (patients)

Better Communication.  
Highest Care. Friendliness.  
Dedication. Sympathy.

3.2 Our work environment

Lead by example. Be a harmonious unit, so that most of the people would like to be part of the unit. People wanted to associate with success.

3.3 Ourselves (the nurses)

Highly Competent.  
Dedicated  
Hard working  
Willing to learn,  
Keep ourselves with relevant research.

5. How can we make our aspirations visible?

Set achievable goals.

DAY	NIGHT	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	01:00	02:00	03:00	04:00	05:00	06:00																																																							
<p><b>HEART RATE</b></p> <p><b>CARDIAC RHYTHM</b></p> <p>ST = Sinus Tachycardia AF = Atrial Fibrillation            SB = Sinus Bradycardia Vtb = Vent Fibrillation            SR = Sinus Rhythm VT = Ventricular Tachy            PVC = Prem Ventr Contr P = Paced            Atrial = Atrial Flutter</p> <p><b>TEMPERATURE ROUTE</b></p> <p>Temp °C</p> <p><b>CVP / LAP</b></p> <p>CO PAC            CI PAMP            CI PAMP            SV MPAP            SVI PAMP            SVR            SVRI            SVV            MAP MAP            ICP IAP            CPP            Trigger            Augmentation            Ratio            Timing            Sensing Threshold            Mode            Rate            Sensing            Pacing            Output            Sensitivity            Other</p> <p><b>Pain</b></p> <p>Out of 10            Intervention</p> <p><b>Alarms &amp; Expected Outcomes</b></p> <p><b>Alarms</b></p> <p>O<sub>2</sub> Delivery Device            FiO<sub>2</sub> / Flow            Ventilatory Rate            SpO<sub>2</sub>            Air Entry L / R            Humidification / Temp            ET Position / Cuff Pressure            PEEP / EPAP            Controlled Variable (Pressure/Volume)</p> <p><b>Expected Outcomes</b></p> <p>Pressure Limit            Phase / Pdur            Pmean            Volume Limit Set / TV            V<sub>T</sub> SPONT            MV Tot / PI            Rate Set / PI            TI / Trac / Throug            I / E Set / PI            Time to Peak            PI Trigger PressureFlow            PS / A2S / ATC            Leak            RSI            Apnoea Settings            Apnoea Incident</p> <p>Interval Rate FiO<sub>2</sub> TV IP</p> <p><b>BLOOD VALUES</b></p> <p>pH            PCO<sub>2</sub>            PCO<sub>2</sub>            Stiff Bicarb            Base Excess            SaO<sub>2</sub>            P<sub>50</sub>            Lactate            hb / PCV            Shunt (SaDO<sub>2</sub> / P<sub>50</sub> Ratio)            ACT            Na<sup>+</sup>            K<sup>+</sup>            K<sup>+</sup> Replacement            Serum Glucose</p> <p><b>Respiratory</b></p> <table border="1"> <thead> <tr> <th>Drug</th> <th>Mixture</th> <th>Dose Unit</th> <th>07:00</th> <th>08:00</th> <th>09:00</th> <th>10:00</th> <th>11:00</th> <th>12:00</th> <th>13:00</th> <th>14:00</th> <th>15:00</th> <th>16:00</th> <th>17:00</th> <th>18:00</th> <th>19:00</th> <th>20:00</th> <th>21:00</th> <th>22:00</th> <th>23:00</th> <th>24:00</th> <th>01:00</th> <th>02:00</th> <th>03:00</th> <th>04:00</th> <th>05:00</th> <th>06:00</th> </tr> </thead> <tbody> <tr> <td>E.g. Adrenaline</td> <td>50mcg/200mcnl</td> <td>mcg/kg/min</td> <td>Rate</td> <td>Dose</td> </tr> </tbody> </table> <p><b>INFLUX TARGET</b></p> <p>Oral Intake            Enteral Feed            Past 24hrs            Past 24hrs            Past 24hrs            Urine</p> <p><b>COMULATIVE BALANCE</b></p> <p>Caefic/Aspirate            Other</p> <p><b>OUTPUT TARGET</b></p> <p>Bowel Action:            Urine analysis day            Urine analysis night</p> <p>Drains Suction</p> <p>07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 24:00 01:00 02:00 03:00 04:00 05:00 06:00</p> <p>B = Bubbling            S = Swinging            D = Draining            Wound Check            Other</p> <p><b>PERFUSION</b></p> <p>Capillary Refill seconds            TEMPERATURE (C = Cold W = Warm N = Hot)            PULSE (E = Eff (irregular) S = Doppler)            COLOUR (P = Pink / Pale / Cyan / Dusky / M = Mottled / N = Normal / J = Jaundiced)            All Alarms Checked            Signature / Initials            Shift Leader Check</p>																											Drug	Mixture	Dose Unit	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	01:00	02:00	03:00	04:00	05:00	06:00	E.g. Adrenaline	50mcg/200mcnl	mcg/kg/min	Rate	Dose																						
Drug	Mixture	Dose Unit	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	01:00	02:00	03:00	04:00	05:00	06:00																																																						
E.g. Adrenaline	50mcg/200mcnl	mcg/kg/min	Rate	Dose																																																																												

# ICU CHART

**Place Patient Sticker Here**

Hospital / Clinic: \_\_\_\_\_  
 Admission No.: \_\_\_\_\_  
 Title: Prof. Dr. Rev. Mr. Mrs. Ms.  
 Surname: \_\_\_\_\_  
 Names: \_\_\_\_\_  
 Attending Doctor: \_\_\_\_\_

**ALLERGIES**

**RISK FACTORS**

VTE  L  M  H

HOSPITAL: \_\_\_\_\_ UNIT: \_\_\_\_\_ DATE: \_\_\_\_\_ ADMISSION DATE TO UNIT: \_\_\_\_\_

DIAGNOSIS: \_\_\_\_\_

SURGERY: \_\_\_\_\_

WEIGHT: ACTUAL / EST. \_\_\_\_\_ IBW: \_\_\_\_\_ HEIGHT: \_\_\_\_\_ PATIENT DAY: \_\_\_\_\_

BLOOD: \_\_\_\_\_ INVESTIGATION REQUESTED: \_\_\_\_\_ OTHERS: \_\_\_\_\_

X-RAYS: \_\_\_\_\_

PRIMARY DOCTOR: \_\_\_\_\_ DOCTOR'S INITIAL & SURNAME: \_\_\_\_\_ CONTACT NO. / SPEED DIAL: \_\_\_\_\_

PHYSICIAN: \_\_\_\_\_

ANAESTHETIST: \_\_\_\_\_

CARDIOLOGIST: \_\_\_\_\_

LABORATORY: \_\_\_\_\_

PHYSIOTHERAPIST: \_\_\_\_\_

NEXT OF KIN: \_\_\_\_\_

GENERAL PRACTITIONER: \_\_\_\_\_

VENTILATION DAYS	DAY	SIZE	DAY	TIME	LABORATORY RESULTS	TIME	TIME	TIME	SPECIMEN	PATHOLOGY AND MICROBIOLOGY RESULTS	RESULTS
Ventilator Days	Peripheral Line			Na <sup>+</sup>	Phosphate	Total Protein	PTT Ratio				
Ventilator Circuit	Central Line			K <sup>+</sup>	Hb	Albumin	INR				
ICP Screw	Arterial Line			Cl <sup>-</sup>	PCV/HCT	Globulin	XDP				
EVD	Dialysis Catheter			BICCO <sub>2</sub>	WCC	Total Bilir	Fibrinogen				
TPN Changed	ETT Baseline		/ Trachy	Urea	Platelets	Cory/Urocy Bil	D Dimer				
Urinary Catheter	NGT / OGTT			Creatinine	CRP	AK Phosphate	HELL				
	PAC			GFR	PCT	GST	LDL				
				Osmo	Myoglobin	ALH	Cholesterol				
				Anion Gap	CKMB	AST	Triglycerides				
				Ca <sup>++</sup>	Trop T	Blood Time	Piv BNP				
				Mg <sup>++</sup>	CPK	Pl PTT					

**MEDICAL NOTES**

ACUITY \_\_\_\_\_

DOCTOR'S SIGNATURE \_\_\_\_\_

**RESTRAINTS**

YES \_\_\_\_\_ TYPE \_\_\_\_\_

**WOUND MANAGEMENT**

PHYSIOTHERAPIST	DIALYSIS	DIETICIAN	NURSING	OTHER

DAY	MEDICATION AS PER SCRIPT	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	01:00	02:00	03:00	04:00	05:00	06:00	
	Dose / Route																									

**RESCUE AGONIST/ANTAGONIST**

Comatose	Clearly comatose or violent, immediate danger to staff	+4
Very Agitated	Pulls on or removes tubes(s) or catheter(s) or exhibits aggressive behaviour	+3
Agitated	Frequently nonpurposeful movement of patient/ventilator dys-synchrony	+2
Restless	Anxious or apprehensive but movements not aggressive or vigorous	+1
Alert and Calm		0
Drowsy	Not fully alert, but has sustained (>10 seconds) awakening, with eye contact, to voice	-1
Light Sedation	Briefly (<10 seconds) awakens, with eye contact, to voice	-2
Moderate Sedation	Any movement (but no eye contact) to voice	-3
Deep Sedation	No response to voice, but any movement to physical stimulation	-4
Unarousable	No response to voice or physical stimulation	-5

**GCS**

Eye opening (out of 4)  
 Best verbal response (out of 5)  
 Best motor response (out of 6)

**GLASSGOW COMA SCORE TOTAL OUT OF 15**

**Pupil Scale (mm)**

1 ●  
 2 ●  
 3 ●  
 4 ●  
 5 ●  
 6 ●  
 7 ●

**PUPILS**  
 Brisk = B  
 Sluggish = S  
 Fixed = F

**RIGHT EYE**  
 Reaction  
 Size

**LEFT EYE**  
 Reaction  
 Size

**ARMS**  
 Left = L  
 Right = R

**LEGS**  
 Left = L  
 Right = R

Normal Power  
 Mild Weakness  
 Severe Weakness  
 Flaccid / Movement  
 No Movement

Normal Power  
 Mild Weakness  
 Severe Weakness  
 Flaccid / Movement  
 No Movement

Seizures

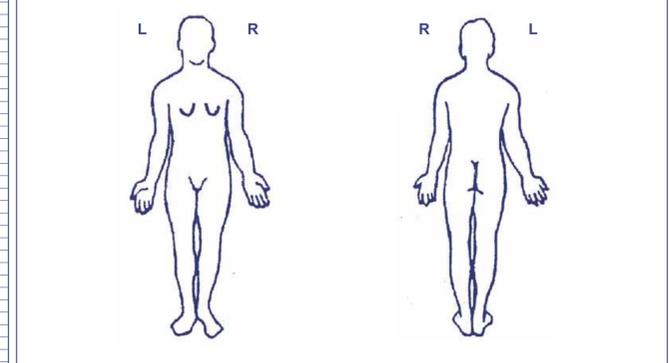
Signature \_\_\_\_\_

ASSESSMENT DATA - Physical & Diagnostic Tests

DAY	Time:	Signature:	NIGHT	Time:	Signature:
CIRCULATION	ASSESSMENT DAY	ASSESSMENT NIGHT	OXYGENATION	ASSESSMENT DAY	ASSESSMENT NIGHT
	RESISTANCE:	COMPLIANCE:	RESISTANCE:	COMPLIANCE:	
NURSING DIAGNOSIS	EXPECTED OUTCOMES:	NURSING DIAGNOSIS	EXPECTED OUTCOMES:	NURSING DIAGNOSIS	
	NURSING PRESCRIPTION	NURSING PRESCRIPTION	NURSING PRESCRIPTION	NURSING PRESCRIPTION	
NUTRITION	ASSESSMENT DAY	ASSESSMENT NIGHT	FLUID, ELECTROLYTES & ACID BASE BALANCE	ASSESSMENT DAY	ASSESSMENT NIGHT
	INFUSION RATE	INFUSION RATE	INFUSION RATE	INFUSION RATE	
NURSING DIAGNOSIS	EXPECTED OUTCOMES:	NURSING DIAGNOSIS	EXPECTED OUTCOMES:	NURSING DIAGNOSIS	
	NURSING PRESCRIPTION	NURSING PRESCRIPTION	NURSING PRESCRIPTION	NURSING PRESCRIPTION	
COMFORT, SLEEP & REST	ASSESSMENT DAY	ASSESSMENT NIGHT	PSYCHO-SOCIAL / SPIRITUAL / COMMUNICATION	ASSESSMENT DAY	ASSESSMENT NIGHT
	ASSESSMENT DAY	ASSESSMENT NIGHT	ASSESSMENT DAY	ASSESSMENT NIGHT	
NURSING DIAGNOSIS	EXPECTED OUTCOMES:	NURSING DIAGNOSIS	EXPECTED OUTCOMES:	NURSING DIAGNOSIS	
	NURSING PRESCRIPTION	NURSING PRESCRIPTION	NURSING PRESCRIPTION	NURSING PRESCRIPTION	
SENSATION / PERCEPTION / SAFETY	ASSESSMENT DAY	ASSESSMENT NIGHT	SKIN & WOUND CARE	ASSESSMENT DAY	ASSESSMENT NIGHT
	ASSESSMENT DAY	ASSESSMENT NIGHT	ASSESSMENT DAY	ASSESSMENT NIGHT	
NURSING DIAGNOSIS	EXPECTED OUTCOMES:	NURSING DIAGNOSIS	EXPECTED OUTCOMES:	NURSING DIAGNOSIS	
	NURSING PRESCRIPTION	NURSING PRESCRIPTION	NURSING PRESCRIPTION	NURSING PRESCRIPTION	
TEMPERATURE CONTROL	ASSESSMENT DAY	ASSESSMENT NIGHT	ELIMINATION	ASSESSMENT DAY	ASSESSMENT NIGHT
	ASSESSMENT DAY	ASSESSMENT NIGHT	Last bowel action date:	ASSESSMENT NIGHT	
NURSING DIAGNOSIS	EXPECTED OUTCOMES:	NURSING DIAGNOSIS	EXPECTED OUTCOMES:	NURSING DIAGNOSIS	
	NURSING PRESCRIPTION	NURSING PRESCRIPTION	NURSING PRESCRIPTION	NURSING PRESCRIPTION	
MOBILITY & EXERCISE	ASSESSMENT DAY	ASSESSMENT NIGHT	HYGIENE	ASSESSMENT DAY	ASSESSMENT NIGHT
	ASSESSMENT DAY	ASSESSMENT NIGHT	ASSESSMENT DAY	ASSESSMENT NIGHT	
NURSING DIAGNOSIS	EXPECTED OUTCOMES:	NURSING DIAGNOSIS	EXPECTED OUTCOMES:	NURSING DIAGNOSIS	
	NURSING PRESCRIPTION	NURSING PRESCRIPTION	NURSING PRESCRIPTION	NURSING PRESCRIPTION	
TIME	IMPLEMENTATION REPORT	SIGNATURE	TIME	IMPLEMENTATION REPORT	SIGNATURE

RESTRAINTS	TIME RESTRAINTS APPLIED:	TIME RESTRAINTS REMOVED:	TYPE OF RESTRAINT:	LIMBS AT RISK:																					
NEUROVASCULAR OBSERVATIONS	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	01:00	02:00	03:00	04:00	05:00	06:00	
DEDEMA L/R																									
SENSORY FUNCTION																									
PAIN																									
PASSIVE / ACTIVE EXERCISES																									
RANGE OF MOVEMENT OF LIMB																									
EPIDURAL ASSESSMENT	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	01:00	02:00	03:00	04:00	05:00	06:00	
INSERTION SITE																									
BROMAGE SCORE																									
DERMATOME LEVEL	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R

Check for and report: Increased Sedation; Ventilatory Rate < 10/min; Block at Xiphoid Sternum; Hypotension; Bradycardia; Headache; Severe or Sudden Back Pain; Pyrexia; Numbness or Tingling Sensation; Convulsions



GRADE	CRITERIA	BROMAGE SCORE	DEGREE OF BLOCK
I	Free movement of legs and feet	NI (0%)	NI (0%)
II	Just able to flex knees with free movement of feet	Partial (33%)	Partial (33%)
III	Unable to flex knees, but with free movement of feet	Almost complete (66%)	Almost complete (66%)
IV	Unable to move legs or feet	Complete (100%)	Complete (100%)

CUBBIN AND JACKSON PRESSURE SORE RISK ASSESSMENT TOOL									
Age	Weight	General skin condition	Mental condition	Mobility					
< 40	4	Average	4	Intact	4	Awake and alert	4	Walks with help	4
40 - 55	3	Obese	3	Red skin/areas	3	Apathetic, restless, confused	3	Very limited chair bound	3
55 - 70	2	Cachectic	2	Grazes or excoriated skin (superficial)	2	Unresponsive	2	Immobile but tolerates position change	2
> 70	1	Any of above + edema	1	Necrosis or exuding sore (deep)	1	Coma, unresponsive paralysed and/or sedated	1	Unable to tolerate movement or nursed prone	1

NURSING CARE	FREQ	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24:00	01:00	02:00	03:00	04:00	05:00	06:00	
TRACHEOSTOMY CARE																										
POSITION CHANGE ET TUBE																										
POSITION CHANGE PATIENT																										
PRESSURE PART CARE																										
MOBILIZATION																										
WOUND CARE																										
BED BATH																										
SHAVE																										
CATHETER CARE																										
MOUTH CARE																										
EYE CARE																										
HEAD ELEVATION (ESTIMATED)																										
PNEUMATIC DEVICES																										
BRONCHIAL TOILET																										
PHYSIO																										

BASELINE	ASLINE	CENTRAL LINE	PERIPHERAL	GASTRIC TUBE

FLUID BALANCE PREVIOUS 24 HRS	INTAKE	PRODUCT	UNIT NUMBER	GROUP & RH	DATE BLED	EXPIRY DATE	COMMENCED	COMPLETED	SIGNATURE 1	SIGNATURE 2
Blood and blood products										
Infusions										
Other										
INTAKE TOTAL										
OUTPUT										
Urine										
Dialysis										
Gastric / Vomiting										
LWD										
Wound Drains										
Wound / Bleeding										
Other										
OUTPUT TOTAL										
BALANCE PREVIOUS 24 HRS										
CUMULATIVE BALANCE										

RISK PREVENTION CHECKLIST	DAY	NIGHT	RISK PREVENTION CHECKLIST	DAY	NIGHT	SHIFT	DESIGNATION	NAME	INITIALS AND SIGNATURE	SHIFT	DESIGNATION	NAME	INITIALS AND SIGNATURE
Monitor & Ventilator plugged into ups			IO Bands										
Suction Unit working			Sharps Container / Not full										
Full O2 Cylinder & Flow meter working			Brakes on assist devices										
Bag valve resuscitator connected			PEEP valve (correct size)										
Alarms set			Bed-rails										
Stethoscope			Emergency equipment checked										
Cleanliness			Vacuities & lines labelled										
Tracheal Dilator present			Isolation Precautions										
Spare Trachy Tube available													
Patent file tidy and kept confidential													

TIME	NAME	DOSE	BATCH NO.	LOT NO.	EXPIRY DATE	SIGNATURE	SIGNATURE

BEST CARE ALWAYS			
Day	Night	Day	Night

**Has the patient been checked for:**

- VAP Bundle**
  - Device head of bed 30° - 45°, unless contra-indicated
  - Daily assessment of readiness to extubate
  - Peppic ulcer prophylaxis
  - DVT Prophylaxis
  - Oral care with chlorhexidine at least 6 hourly
- Central Line Bundle**
  - Hand hygiene
  - Maximal Barrier Precautions
  - Chlorhexidine alcohol skin antiseptics
  - Optimal catheter site selection (Aveit femoral vein)
  - Daily review of line necessity - removal of unnecessary lines
- SSI Bundle**
  - Appropriate use of antibiotics: prophylaxis within 1 hour of incision
  - Appropriate hair removal: no shaving!
  - Post-operative glucose control (major cardiac surgery patients)\*
  - Post-operative normothermia (colorectal surgery patients)\*
  - Avoid unnecessary urinary catheters
  - Insert using aseptic technique
  - Maintain catheters based on recommended guidelines
  - Review necessity for catheter daily and remove promptly
- CATI Bundle**
  - Review necessity for catheter daily and remove promptly
  - \* These components of care are supported by clinical trials and experimental evidence in the specified populations; they may prove valuable for other surgical patients as well.

ABBREVIATIONS	
ABG	Arterial Blood Gas
Acc	Accumulative
a.e.b.	as evidenced by
A-line	Arterial Line
ASB	Assisted Spontaneous Breathing
AQ	Agar Pack
CI	Cardiac Index
CNS	Central Nervous System
CO	Cardiac Output
CNP	Central Venous Pressure
CPR	Cardiopulmonary Resuscitation
CVP	Central Venous Pressure
CVS	Cardio Vascular System
DW	Distal Water
DBP	Diastolic Blood Pressure
DNIR	Do Not Resuscitate
EPAP	Expiratory Positive Airway Pressure
ET	Endotracheal Tube
EVD	Extraventricular Drain
FBC	Full Blood Count
GI	Gastro Intestinal
Hb	Hemoglobin
HGT	Hemoglobin Test
HR	Heart Rate
Hrly	Hourly
Hx	History
IABP	Intra-aortic Balloon Pump
IAP	Intra-abdominal Pressure
IBP	Invasive Blood Pressure
ICP	Intracranial Pressure
IC	Intubation
L	Left
LAP	Left Atrial Pressure
MABP	Mean Arterial Pressure
MV	Muscle Ventilation / Volume
Na+	Sodium
NC	Nasal Cannula
NCT	Nasogastric Tube
NIAP	Non-invasive Blood Pressure
NIS	Normal Saline
OGT	Orogastric Tube
PAP	Pulmonary Arterial Pressure
PACOP	Pulmonary Arterial Occlusion Pressure
PCA	Patient Controlled Analgesia
PCV	Packed Cell Volume
PEEP	Positive End Expiratory Pressure
Piaw	Peak Inspiratory Pressure
Piaw	Plateau Pressure
Piaw	Mean Airway Pressure
PS	Pressure Support
PL	Patient
R	Right
Rx	Respiratory Factor
RL	Right Leg Lead
Rx	Treatment
SBP	Systolic Blood Pressure
SyD	Spinal Sedation
SV	Stroke Volume
SVR	Systemic Vascular Resistance
SVRI	Systemic Vascular Resistance Index
SVV	Stroke Volume Variation
Temp	Temperature
Ti	Inspiratory Time
Trache	Trachea
Trach	Trachea Time
Tv	Tidal Volume
Tvt	Expiratory Total Volume
LWD	Underwater Drain
VTE	Venous Thrombo-Embolism
WBC	Wound