Evaluation of the Medication Delivery Process at LIFE Healthcare

by

Indren Rama Poovan

A dissertation submitted in partial fulfilment of the requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

at

Potchefstroom Campus of the North – West University

Supervisor : Prof J Du Plessis **April 2007**

DECLARATION

I, the undersigned hereby declare that the work contained in this dissertation is my own original work and has not previously in its entirety been submitted before for any degree or examination at any university.

....

I R POOVAN **DATE**

ACKNOWLEDGEMENTS

I would like to thank my wife, Charne' and my boys, Cole and Jedd for their unrelenting support during the completion of this mini dissertation. Your understanding has inspired me to persevere effortlessly.

I also thank Prof J du Plessis, my supervisor, and all of those who assisted me.

SUMMARY

The medication administration process in Life Healthcare is a complex, multi-disciplinary process with the potential for error occurring at various stages of the process. The complexity of the process makes it impossible for one solution to be considered as the "magic bullet". Building safety into the process requires interventions at various stages of this process; hence the solutions proposed.

The objective of this dissertation was to evaluate nursing medication administration practices and design solutions which will reduce the probability of the occurrence of errors. The rationale for limiting this project to nursing was that, upon review of the incident statistics correlated by Life Healthcare, 63% of medication errors were attributable to nursing administration.

The company's policies governing the medication administration process, was reviewed and assessed for compliance by observing the medication rounds.

The main findings were that policies and procedures were comprehensive, easy to understand and easily accessible to all staff. However, the ward rounds and interviews with specialists revealed that, despite being aware, the staff members were often not complying with the policies. The research confirmed that there was inconsistent reporting of incidents within the group and that under reporting was rife. Where errors had been reported, root cause analysis was not always performed, which posed a challenge to formulating and implementing corrective and preventive measures.

The recommendations included :-

1. Dedicated staff for the medication administration rounds
2. Implement scheduling system to produce a medication administration schedule
3. A system to record and report errors to determine root cause analysis
4. Investigate the appropriateness of the information on the medication label.

These recommendations must not be viewed in isolation, and although not exhaustive, can provide Life Healthcare with a basis to resolve this very complex issue.

Table of Contents

Table of Contents (continued)

Table of Contents (continued)

CHAPTER 5 CONCLUSION AND RECOMMENDATIONS

Table of Contents (continued)

List of Appendices :-

List of Figures and Tables

Figures :-

Tables :-

List of Definitions

Acute	:	Severe or intense
Agency staff	:	Temporary staff sourced through third party Organisation
Allergy	:	Extreme sensitivity to a substance which causes the body to react to any contact with it
Cardiology	:	The branch of medicine dealing with the heart and the blood vessels
Chronic illness	:	Illness that is continuing for a long time
Competency	:	Level of knowledge and skill that is suitable or sufficient for the purpose
Dispensing	:	To prepare and distribute medication
Extended Hospital Stay	:	Extension of period authorised for patient to remain in hospital subject to availability of funds
Funder	:	An institution that provides a reserve of money that is set aside for a certain purpose
Medication Administration Process	:	The steps that are followed in the dispensing of medication
Neurology	:	The study of the nervous system
Occupancy	:	The period of time during which one is an occupant of a property
Prescription	:	Written instructions from a doctor for the preparation and use of a medicine to be issued to a patient
Value chain	:	General framework for strategic thinking in respect of activities that are involved in the rendering of a service or the production of a product

List of Abbreviations

Imeds	-	Billing software adopted by life Healthcare
Sheq	-	Safety, Health, Environment and Quality
CSF	-	Critical Success Factor
IT	-	Information technology
IOM	-	Institute of Medicine
RFP	-	Request for proposal
RN	-	Registered Nurse – Category of Nursing
EN	-	Enrolled Nurse – Category of Nursing
ENA	-	Enrolled Nursing Assistant – Category of Nursing
CHF	-	California Health Foundation
LHC	-	Life Healthcare

CHAPTER 1 : INTRODUCTION

1.1 Background to the problem

The medication administration process is multi-disciplinary, involving doctors, nurses and pharmacists (refer to Figure 1.1). The focus of this study is on nursing related medication errors as it is a major factor in the quality of the healthcare delivery system (Life Healthcare Annual Report, 2006). The potential for errors occurs at each phase of the medication administration process (refer to Figure 1.2). The rationale for this focus is derived from the review of incidents in Life Healthcare acute hospitals, which shows that the majority of medication administration errors were attributable to nursing. The statistics revealed that of the 1227 medication errors reported in the 30 month period from June 2004 to January 2006, 63% were nursing medication administration errors (Life Healthcare Statistics Report, 2006).

The provision of quality care is viewed as a major differentiating factor in gaining a competitive advantage in the provision of private healthcare. Reducing nursing medication administration errors is an integral part of improving the quality of patient care.

Life Healthcare is one of the largest private hospital operations outside the United States of America. Life Healthcare's primary business is acute hospital care and comprises one of the most geographic spreads of acute care hospitals and same day surgical centres in South Africa.

Life Healthcare's high technology private hospitals are complimented by related healthcare services businesses that provide an integrated healthcare delivery system covering the full range of medical care.

The Life Healthcare Group operates 62 acute care facilities with a comprehensive geographic spread in seven South African provinces and Botswana and enjoys the support of approximately 2 700 doctors and specialists. Other disciplines of Life

Healthcare include Life Esidimeni which is the oldest and largest public/private partnership in South Africa providing long – term care to chronically ill patients through it's 24 facilities.

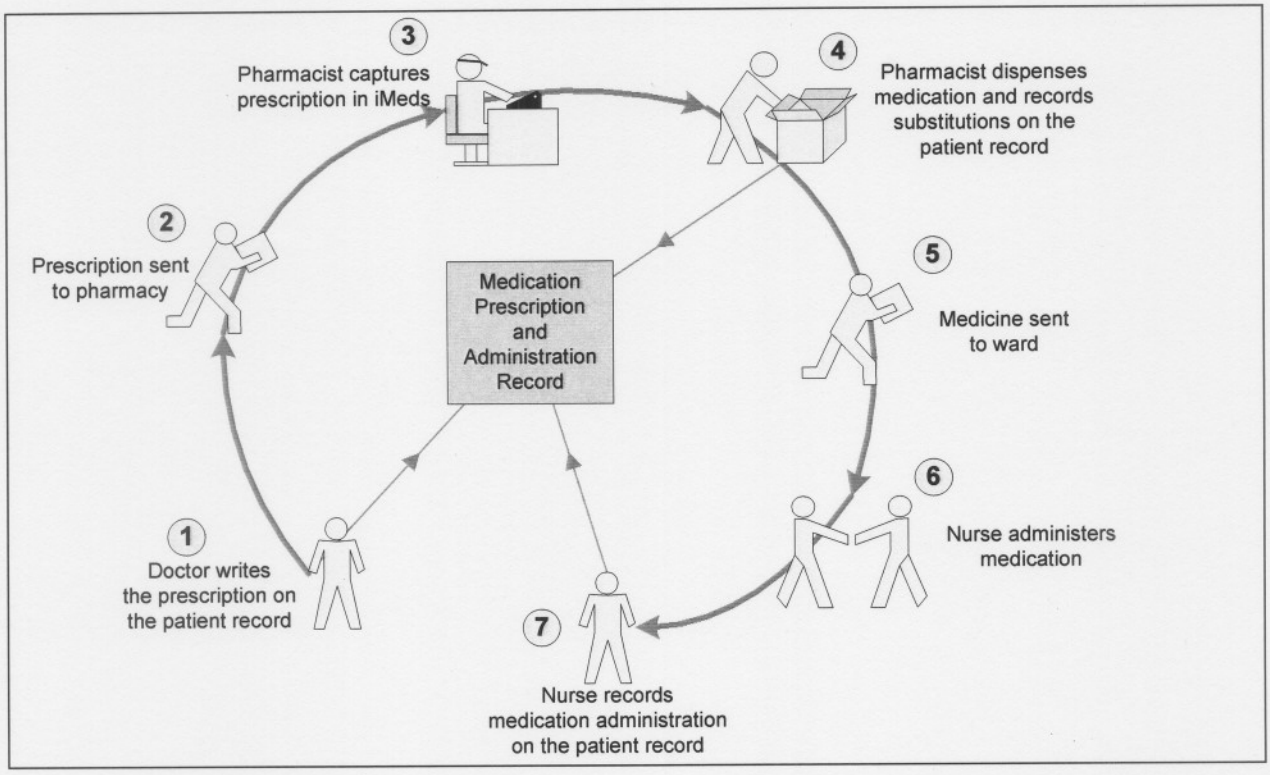
Other Business Operations derived from Life Healthcare include Life Rehabilitation which offers acute, outcomes driven physical and cognitive rehabilitation for patients disabled by stroke, brain or spinal trauma , and other disabling injuries and Life Occupational Health which is the countries leading provider of contracted, on – site, occupational and primary healthcare services to large employer groups. The business has 186 clinics and takes care of over 120 000 employees as well as Life Doctor Solutions which provides doctors and specialists with IT systems and business support to help with practice management. (Life Healthcare Business Review Supplement, 2006)

A considerable amount of time has been spent in Life Healthcare over the past five years in the investigation and prevention of medication administration errors. Despite the significant effort spent the problem still persists and limited success has been enjoyed from the various initiatives. (Life Healthcare Statistics Report, 2006)

There are currently different functional task teams working on projects aimed at reducing the probability of the occurrence of medication administration errors within the organisation. Some of the findings from previous works show that individual hospitals within the group are using different practices and also do not share best operating practices. This study aims to provide an opportunity to introduce standardised processes and best operating practices throughout the Group in order to reduce nursing administration errors, thereby improving the quality of Healthcare as offered by Life Healthcare.

Figure 1.1 as depicted below illustrates the process of the administration of medication and highlights the various parties involved in the administration of medication cycle. What is important to note is that whilst the administration process involves various parties, nurses contribute 63% of the medication errors from the sample period selected for review.

Figure 1.1: The medication administration cycle – Life Healthcare Policies and Procedures Manual, 2006

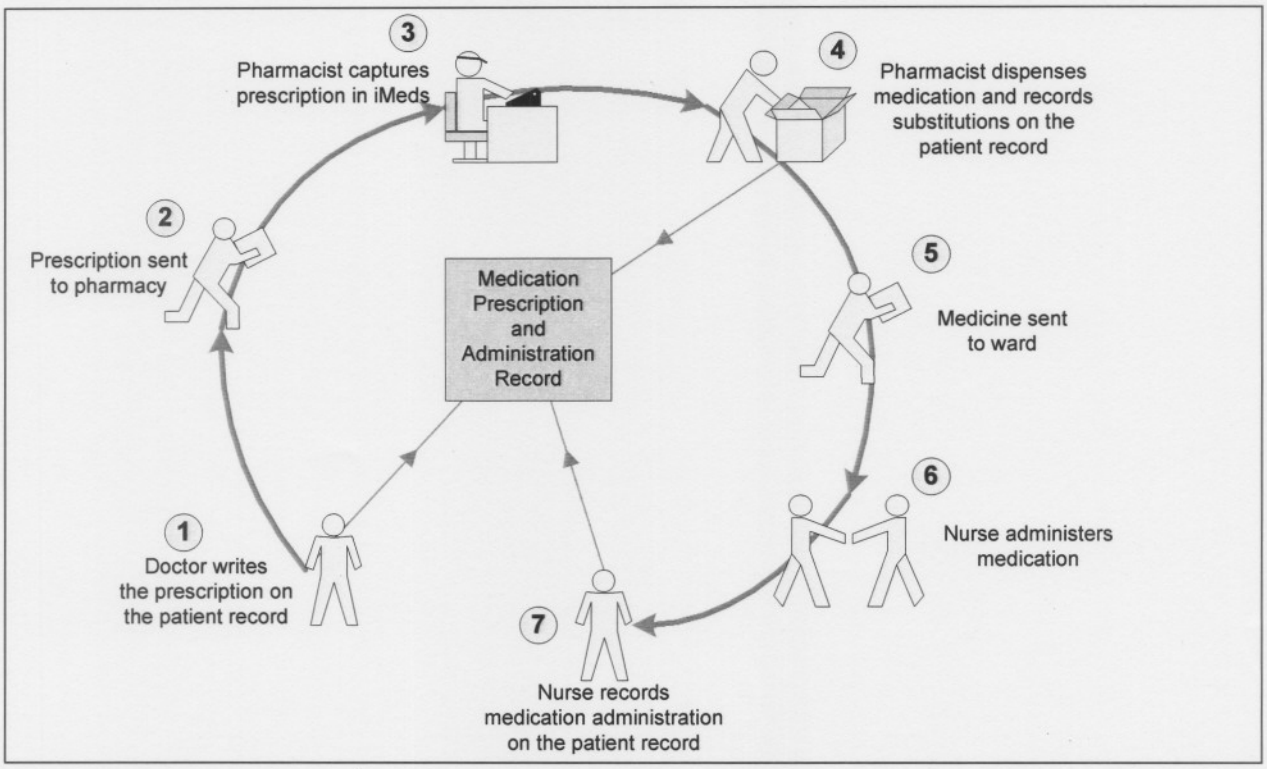


The Life Healthcare policies and procedures that govern the administration and process of medicine administration are well documented and have been well researched. The policies are legally compliant and satisfy stringent legal and professional standards (Life Healthcare Policies and Procedures Manual, 2006).

Despite the existence of these policies and procedures medication administration errors remain a concern to the company.

Figure 1.1 as depicted below illustrates the process of the administration of medication and highlights the various parties involved in the administration of medication cycle. What is important to note is that whilst the administration process involves various parties, nurses contribute 63% of the medication errors from the sample period selected for review.

Figure 1.1: The medication administration cycle – Life Healthcare Policies and Procedures Manual, 2006



The Life Healthcare policies and procedures that govern the administration and process of medicine administration are well documented and have been well researched. The policies are legally compliant and satisfy stringent legal and professional standards (Life Healthcare Policies and Procedures Manual, 2006).

Despite the existence of these policies and procedures medication administration errors remain a concern to the company.

Table 1.1 Examples of potential errors - Life Healthcare Policies and Procedures Manual, 2006

- Illegible descriptions.
- Allergies not checked.
- Wrong dose.
- Wrong frequency.
- Wrong medication.
- Route not stated.

- Prescription card not sent to Pharmacy / lost delayed.

- Wrong patient.
- Allergies not checked.
- Prescription not verified.
- Substitute medication not recorded.

- Wrong medication.
- Wrong patient.

- Medication late
- Medication lost

Prescription card not in ward.
Check list referred to in Appendix A not followed:

- Wrong patient.
- Wrong drug.
- Wrong Dose.
- Wrong time.
- Wrong route.

1.1.1 Vision Statement

The vision of Life Healthcare is to be a world class provider of quality healthcare for all, and hence requires that a continuous focus is maintained on improving patient care and enhancing the standard of care delivered to the patients. The delivery of uncompromising quality patient care is the number one critical success factor in the company. Quality also forms the core of the company vision and values. (Life Healthcare Policies and Procedure Manual, 2006)

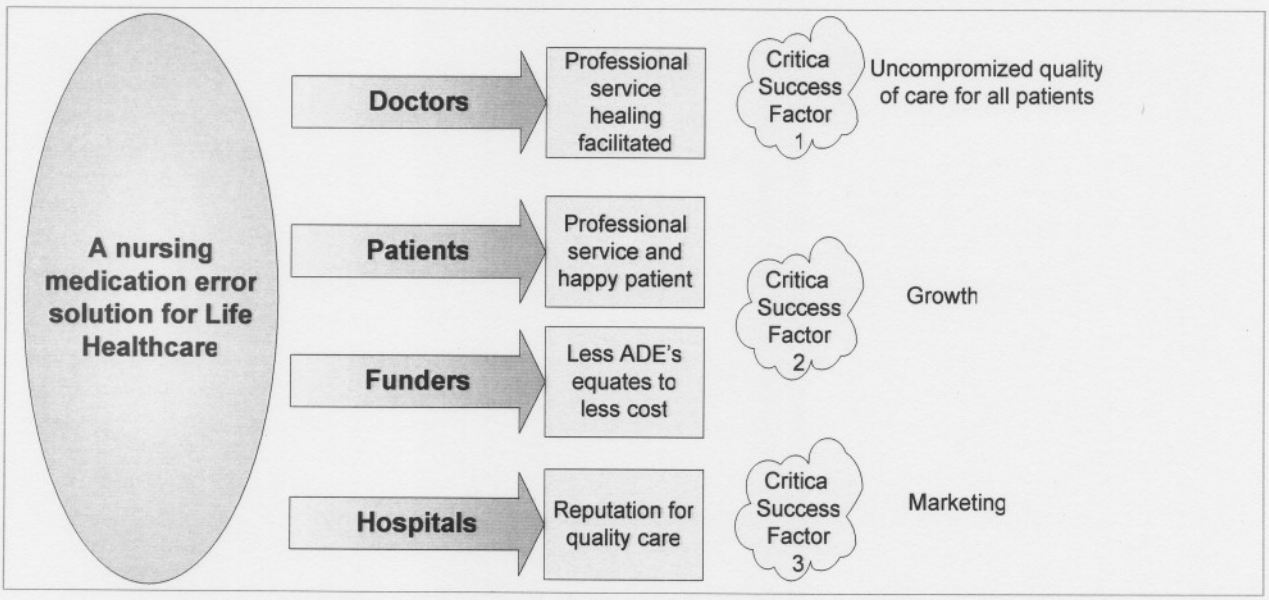
Apart from the very specific risks associated with the incorrect administration of medicines which could cause death, the company's principles of quality, namely :- excellence, energy, ethics, empathy and empowerment can be compromised. Reducing nursing medication administration errors is an integral part of improving the quality of care.

The reduction in the probability of occurrence of medication errors will facilitate the provision of quality patient care and thus underpins growth and reputation of the company. Growing the business is one of the business's critical success factors. Ensuring that the required quality patient care is attained and sustained is a corporate strategy to facilitate growth in the company. Ensuring that the patients are satisfied with the care that they receive is of paramount importance to corporate strategy. (Life Healthcare Policies and Procedures Manual, 2006)

Medication errors can also result in extended hospital stay. This results in an increased cost to the funders (medical aid providers and insurers) and the patients. The parties will then seek alternative providers of care who have good reputations.

Figure 1.3 illustrates the advantages to various role players if medication errors can be significantly reduced through a focused intervention. The illustration depicts the good practice to customer experience and also to the company's critical success factors (CSF's):

Figure 1.3 : Impact of Nursing Medication Solution for Life Healthcare - Life Healthcare Policies and Procedures Manual, 2006



1.1.2 Qualitative and Quantitative Benefits

The financial implications of incorrect administration of medication include costs of litigation and possibly settlement, additional costs to the patient for extended health care as a result of either complications or lack of progress, and costs to the funder for extension of health care. The last two implications are difficult to quantify. This is supported by Kohn, Corrigan, and Donaldson, 1999 who state "*But not all costs can be directly measured. Errors are also costly in terms of trust in the system by patients and diminished satisfaction by both patients and health professionals.*" So far, there are no formal studies which have been done within Life Healthcare to quantify the cost of medication administration errors. One would have to study the effect, for example extended hospital stay.

This could prove difficult since there are many factors that could impact on hospital stay. The first hurdle would be to prove that the prolonged stay is directly attributable to the medication error.

The benefits which will be derived from the recommended solutions, although difficult to quantify, are of a qualitative nature. Improved quality of service to the patients is a critical success factor that will differentiate our service in a competitive healthcare environment, thereby making Life Healthcare a preferred provider to the funder. Reduction of medication errors will support a healthy quality score card that reflects the "Life Healthcare Quality Management Measures" (Appendix B) that is reported monthly. Funders are becoming increasingly cognizant of poor quality outcomes in the private healthcare industry. This has been recently highlighted by Discovery Medical Aid (2006) who have published a scorecard which purports to accurately reflect patient outcomes in the private healthcare sector. Looking ahead it is almost certain that other Funders will follow suite in a view to control and regulate Private Healthcare spend with Private Healthcare Providers.

1.2 Problem Statement

As outlined in section 1.1, the current situation reflects that the statistics revealed that, of the 1227 medication errors reported in the 30 month period from June 2004 to January 2006, 63% were nursing medication administration errors. From this the following problem statement can be posed : ***How can nursing administration related errors be reduced to improve the provision of quality care to patients ?***

1.2.1 Sub Problems

From the Problem Statement the following sub problems can be identified:

1.2.1.1 How can nursing administration practices be improved in order to design a practical system that will reduce nursing administration errors?

1.2.1.2 How can a practical system to reduce medication administration errors be implemented in Life Healthcare?

1.3 Objectives

From the sub – problems 1.2.1.1 and 1.2.1.2 outlined in 1.2.1 above the following objectives have been identified :-

- To identify best operating practices aimed at reducing nursing medication administration errors.
- To identify practical methods of implementing best operating practices aimed at reducing nursing medication administration errors.

1.4 Scope of the study

The mini dissertation focuses on the evaluation of nursing medication administration practices within the Life Healthcare acute hospitals. The decision to analyse only four hospitals and to exclude other business units as well as competitors stems from the time constraints and limited resources. Life Healthcare's acute care hospitals are geographically divided into the coastal and inland regions. Two hospitals in each region were selected.

The hospitals selected were similar in respect of the following:

- Consistency of reporting incidents.
- Were medium and large hospitals.
- Provided all medical disciplines including high technology units for example, Neurology and Cardiology.
- Had occupancies of more than 56%.

The suggested solutions, if accepted will be rolled out and implemented by the relevant specialist functions at Life Healthcare, for example, nursing and pharmacy.

1.4.1 Assumptions

For the purpose of this research, the following assumption was made:
The reported incidents were taken to be a good reflection of the types of incidents that occurred at the hospitals. It however, was recognised that incidents in Life Healthcare were at times not properly investigated and reporting criteria not uniformly applied amongst the hospitals.

1.5. Research Methodology

In order to address the problem of Nursing Administration Errors at Life Healthcare, a number of research methods including surveys, questionnaires and interviews were used. These methods were utilized to gain new insights into the theme under discussion with a view of making a contribution to reducing the Nursing Administration Errors at Life Healthcare.

1.5.1 Literature Review

A literature review was undertaken in order to identify possible opportunities and synergies with a view to address the sub problems identified in 1.2.1.

External literature as well as internal literature and prescribed internal forms were used during the investigations and in establishing the validity and viability of the proposed solutions and ideas.

Various channels were utilized to source suitable information such as the Internet, a useful tool which was limited to fact based research and information. As expected this generated vast amounts of information, most of which was rendered useless to the needs of this topic. Detailed and pertinent information was utilized in the research and the appropriate credit was given where necessary. Other channels included Internal Documents and reports, the company has done some very useful and valid work on the topic in the past and this resource was used extensively.

A large amount of the work is based on training needs and forms compliance. Internal Statistics such as, the Quality statistics and Incident Reports which was the starting point of the research were also utilized. Internal Forms, along the lines of the *Medication and Prescription Administration Record* - were used in the investigations.

1.5.2 Questionnaires

Closed and Open – ended questions (cf Appendix A) were used to determine root cause analysis for medication errors. A sample of unit managers (outlined in chapter 3) was selected within the scope of units selected. Questions were based on the reporting trends and causes around medication errors. (Appendix A).

1.6 Chapter layout and Summary

Chapter 1 offers an introduction to the investigation, the problem statement and sub-problems, aims, methods description, and the value of the investigation. Chapter 2 contains an overview of the literature study. Chapter 3 contains an overview of the research design and methodology. Chapter 4 provides findings and an analysis of the data in relation to the questionnaires and interviews as outlined in chapter 3. Chapter 5 contains the overall conclusions and recommendations based on the findings as outlined in the third and fourth chapters.

CHAPTER 2 : LITERATURE REVIEW

2.1 Introduction

As outlined in Chapter 1 (cf 1.5.1), a literature review was undertaken in order to identify possible opportunities and synergies surrounding the reduction of medication administration errors. The literature review yielded good results and some valid discussions which were used extensively in the collation of this document.

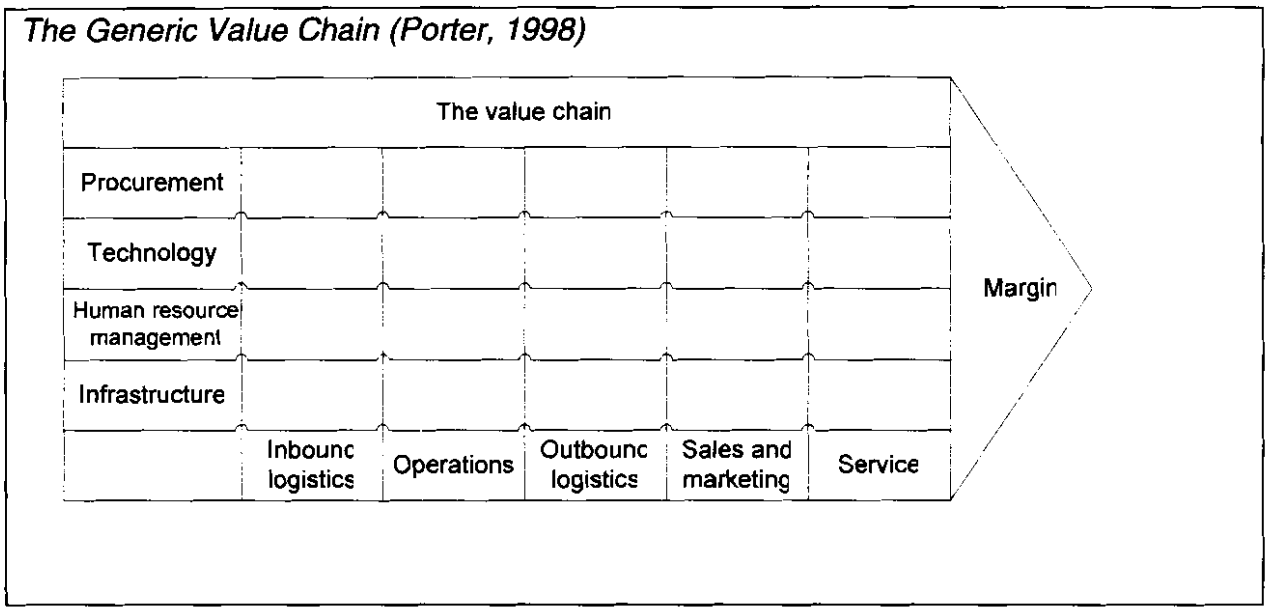
External literature as well as internal literature and prescribed internal forms were used during the investigations and in establishing the validity and viability of the proposed opportunities.

2.2 Value Chain Activities

Porter's (1980) concept of a value chain has provided a general framework for strategic thinking in respect of the activities involved in the medication administration process, and in assessing its benefits, which includes quality. The value chain has helped to provide a rigorous way of understanding the process and the benefits, and why one process or service is better than another. Porter's (1980) industry value-chain analysis is a useful tool that may help Life Healthcare relate better to itself and to the industry. It also assists in the understanding of the manner in which hospitals medication administration process can be used to create value. It is also the starting point in a hospital's analysis of its strengths and weaknesses in terms of the medication administration process for both monetary and quality.

As can be seen below in Figure 2.2, Porter's Generic Value Chain combines all the internal functions and aligns them to achieve a common objective, in this case, known as margin. In Life Healthcare similarly the Value Chain is made up of various counterparts all aligned to achieve a profit margin. However, in achieving this profit margin a quality service delivery system needs to take place and this includes the dispensing of medication to patients.

Figure 2.2 : Porter's Generic Value Chain



2.3 Addressing Medication Errors in Hospitals : A Framework for developing a plan.

California HealthCare Foundation, (2001) states that the problem of medication errors brought vividly to public attention by the 1999 Institute of Medicine (IOM) report has prompted a strong response by the healthcare industry. In order to assist healthcare providers in this urgent quality improvement endeavor, the California Healthcare Foundation recently published *A Primer on Physician Order Entry* (2001) which describes computerized physician order entry systems and provides case studies of hospitals that have implemented these systems.

In the context of medication use, the ideal information technology (IT) infrastructure would include modules that enable clinicians to make the most appropriate decisions about patient care at each step of the process.

The Objectives of the Toolkit described by the Californian HealthCare Foundation, (2001) included the provision of hospital leaders with a foundation for discussing the causes and implications of problems in their facilities by offering information on the magnitude, causes and impact of medication errors. Other objectives also included the explanation of how technology can contribute to reducing errors and how hospitals can apply specific modules at each step of the medication use process as well as the promotion of technological solutions as an integral part of a comprehensive strategy to improve medication safety.

The toolkit also included a step-by-step approach to identifying and targeting the causes of medication errors with appropriate technological applications and went further to assist hospital leaders in assessing the organization's readiness to implement technologies that facilitate the medication process and to help hospitals select products that are consistent with the organization's goals and available resources.

It is important for hospital leaders to consider each potential solution in the context of a long term strategy for using information systems to improve patient safety.

In order to assess the potential and relative value of specific solutions, one must understand the process of medication - use in the hospital setting, the points at which errors tend to occur, and the kinds of errors that can happen.

As outlined in Figure 1.1. (cf Chapter 1) the progression of a medication from the point at which it is ordered to the point where it is administered and recorded.

According to the California HealthCare Foundation, (2001) medication errors encompass anything that prevents the "right patient " from receiving the "right drug " in the " right dose " at the " right time " through the " right route " of administration; these errors occur at any point.

The several ways in which errors may occur in the medication use process include incorrect dosage which is the most common type of error at all steps, although it occurs most often at time of prescribing. The "Wrong Choice" errors are mistakes in judgment with regard to the choice of drug or the dose for a patient. The transcribing errors result in misinterpretation of physician orders. The "Wrong time" errors at the dispensing step typically result from problems with drug stocking or delivery. The "Wrong Choice" and "Wrong dose" errors have been found to be most likely to cause injury.

The California Healthcare Foundation, (2001) attributes majority of medication errors to the lack of knowledge of the drug, lack of knowledge of the patient, deviations from procedures, slips and lapses in memory and transcription errors.

The California Healthcare Foundation, (2001) research suggests an IT (Information Technology) solution to the problem that is limited by funding although it does form a strong basis for removing medication errors.

California Healthcare Foundation, (2001) also reveals that staff should be educated on an ongoing basis thus ensuring that their competency levels with specific reference to their ability to administer medication are always at accepted levels. Most hospitals have a full staff compliment of 75% and the remaining 25% is Agency staff. Agency staff refer to staff that are contract workers and that are not Full Time permanent employees of the company. The flexing requirement is paramount to the efficient controlling of staff costs due to the uncertainty around occupancy levels. Consider a unit that is running at an occupancy of 60% - it makes sense that this unit should be staffed accordingly and not geared up for an occupancy level of 100%. As a result of this agency component, it becomes a constant challenge to continuously train staff on an ongoing basis.

California Healthcare Foundation, (2001) reveals that organizations should strive to create an environment that is non – punitive. The underlying importance of this stems

from the fact that employees are more inclined to report issues if there is no risk of punitive actions. The California Healthcare Foundation, (2001) also reveal that data needs to be collated and reviewed with a view to understand why the errors took place. Unless the cause of errors can be determined, no solution will be effective. The underlying root cause can only be ascertained if accurate reporting takes place.

2.4 Addressing Medication Errors in Hospitals: Ten Tools

California HealthCare Foundation, (2006) recommends that, whether an organization decides to implement new technologies or simply improve on existing systems, it must first provide an environment in which there is heightened awareness about medication safety and a commitment from its leadership to address issues and processes related to the prevention of errors. Technology alone cannot be a solution to medication errors. It's use should be included as part of the organizations overall strategy for creating a " culture of safety " in which there must be adequate understanding of the medication process within the organization, appropriate safety processes in place to prevent medication errors, a baseline assessment of where there are opportunities for improvement and a plan for educating patients and staff members alike on medication safety.

A number of healthcare organizations have prepared various support tools that can assist the hospital in creating an environment of increased awareness and establishing baseline process assessments. These tools can be used to conduct a baseline and follow up assessment of organizational needs in order to provide direction in the selection of technological solutions, and assist with the preparation of the hospital community for medication safety initiatives, including the use of technology.

These tools can also be used in the assessment of the technological needs, and to identify gaps and deficiencies in the current information infrastructure and taking inventory of current systems and capabilities, identify features and capabilities that the organization requires in order to support its medication safety strategies.

Lastly these tools can be utilized to identify products and features that would be of value to the organization as part of a long term strategy and create a list of questions that should be included in a RFP to vendors regarding company stability and experience, product capabilities, impact on the organization and level of service and support provided.

The purpose of these support tools as suggested by California Healthcare Foundation, (March 2006) include an assessment of Medication Use Processes, which is used to guide the organization in assessing the processes involved in the delivery of medications and the need for support from technology.

The Medication error Tracking Form is used to facilitate the collection of data on medication errors in the organization. The Medication Error Reporting Form which is also used in the assessment process is used to identify major sources of errors within and across departments and the checklist for preparing the organization which is used to outline the overall implementation steps and record progress.

A Guide to Potential IT Solutions to Medication errors is used to help the organization identify the IT modules that are best suited to addressing its specific problem areas and the Pros and Cons of IT Options that are used to provide guidance in the evaluation and selection of technologies. The Needs and Assessment of Product evaluation is used to summarize and stratify technology features for purposes of assessing organizational needs and to facilitate comparisons of features among vendors post RFP process.

The Request for proposal (RFP) Template is used to provide the user with a list of questions that should be included in a request for proposals (RFP) from IT vendors and the Estimated Cost Savings Worksheet is used to provide a template for calculating potential savings associated with different technologies and the Implementation Process which outlines a series of steps for implementing technology.

Hospitals can customize these tools to meet their needs and use the tools in conjunction with other available resources to highlight specific medication safety issues.

When analyzing all the information the questionnaires and root cause analysis proved to be the most useful aspects of the literature. The questionnaire (Appendix A) provided a structured framework to work within and was functional because it could be adapted to the hospital scenario and the scope could be limited to ensure that the information received was meaningful.

2.5 Starting a Pharmacy Technician Led Drug Round

Denise Holding, Starting a Pharmacy Technician Led Drug Round (2006) provided some useful measurement tools that concentrated on utilizing a pharmacy resource in conducting a Medication Round.

The Pharmacy Technician led drug round included the Patient Contact, Ward Staff, Dosage Forms, Routes, Protocols and Policies, Security and safety, Training and the ability to implement. Whilst this option could be utilized as an alternative it was dependant on the availability of Pharmacy staffing and does not provide a Nursing Solution to the problem.

2.6 Control and administration of medicine

A study of Life Healthcare Policies and Procedures Manual (2005) revealed a procedure that is intended for all nursing personnel who are involved with the control and administration of medicine to a patient and who have to comply with the standard.

This training document covered a system description –specific to Life Healthcare, the definitions, the procedures and protocols and the competency based assessments of medication routines. In conjunction with interviews and visits this document was used

extensively. The document is recent, well presented and researched; it covered large areas of the subject matter. The procedure is intended for all nursing personnel who are involved with the control or administration of medicine to a patient, and who have to comply with the standard.

2.6.1. Procedure

2.6.1.1 Prescription of a medicine : Life Healthcare (2006)

Medicine must be prescribed by a medical practitioner.

The following legal requirements must be clearly indicated:-

- The date on which the prescription is written
- The name, quantity, strength, dosage and route of the medicine
- Number of dosages to be given
- In cases of Schedule 5 and 6 (as defined in Act 90 of 1997) the amount to be supplied must appear in both figures and words
- The sticker with patients details and hospital visit number must appear on the prescription form
- The prescription must have all the medical practitioners signature, name and qualifications
- The prescription must be legible
- The medicine must not be dispensed on a date later than 30 days from the date that the prescription was issued

Accurate prescription

The nurse should check the prescription carefully before administering the medicines, and if there is any cause for concern it must be queried immediately with the prescribing medical practitioner and/or pharmacist.

2.6.1.2 Administration of medicine : Life Healthcare (2006)

Nursing staff are responsible for the correct administration of prescribed medicine to patients according to the medical practitioner's prescription.

Only medicines prescribed in writing and signed for by the medical practitioner on the individual patient's prescription sheet may be administered. Telephonic prescriptions must only be taken in an emergency. These must be witnessed by 2 nurses and signed by the relevant medical practitioner within 24 hours.

Nurse's responsibilities include the correct medicine to correct patient, the correct dose, Via correct route and the correct frequency.

The administration of medicine must be performed punctually, regularly according to the prescribed frequency and from a medicine trolley/ tray / cupboard at the bedside of each patient.

Accurate record keeping must be taken including the Date, Time, Dose given, the Route and site of administration, the Name of drug, the Signature and rank of person who administers the medicine and the effect of the medicine for example analgesics must monitored and recorded.

Storage of medicine must be in accordance such that all medicines must be kept in the original container supplied by the dispensary for purposes of checking the expiry date and when medicines have to be stored in a fridge a full list must be displayed on the outside of the refrigerator door. This list must be reviewed annually or as required.

Adequate safety principles adopted should include principles such as all allergies must be clearly noted, contaminated and used equipment and sharps must be discarded in the correct manner and containers must be labeled correctly, staff must act strictly in accordance with the instructions given by the prescribing medical practitioner, staff

must be alert and observant throughout the procedure and promptly take the appropriate steps if there is any untoward reaction and ensure that the nurse has the necessary knowledge of the treatment and medicine to identify the reactions to the medicine, as well as the correct dosages in which the medicine must be administered.

Dosages must be calculated utilizing the applicable formula to calculate the correct dosages. In the calculation of pediatric dosages it is important never to guess or roughly estimate the dosage. The child's body weight must be used to calculate the doses, which are expressed in milligram per kg.

2.7 Summary of review

From the literature review, the recommendations that need to be considered in the reduction of nursing administration errors included the need for a quality service delivery system (as in Porter's Value Chain – cf 2.2), appropriate decisions need to be taken in the patient care process (cf 2.3), an in – depth knowledge of sources and reasons of errors is essential (cf 2.3.2 and 2.3.7), education of staff is imperative to ensure competency (cf 2.3.5), the need for a non – punitive environment to stimulate accurate reporting and the creation of a "culture of safety" is imperative.

Chapter 3 addresses the research methodology used for the gathering of information.

CHAPTER 3 : RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

As outlined in Chapter 1 (cf 1.5), the purpose of this research was described as being exploratory and descriptive in nature. The exploratory research requires a literature review (as set out in Chapter 2) as well as a survey (as set out in Chapter 4).

The topic under discussion in this thesis is the evaluation of nursing administration of medication errors in Life Healthcare. In order to fully investigate this statement, both a qualitative and quantitative approach has been adopted.

Based on the literature study, a questionnaire has been drawn up to ask questions to a sample of staff members of Life Healthcare that pertain to the role of medication administration. The qualitative research was also addressed in terms of interviewing staff members of Life Healthcare who are directly involved in the administration of medication process.

A research design is a plan or structured framework of how you intend conducting the research process in order to solve the research problem. Research methodology refers to the methods, techniques and procedures that are employed in the process of implementing the research design or research plan (Babbie & Mouton, 2001: 104)

The research design, according to Mouton (2001: 55-56), will indicate what kind of research will be done, as well as what kind of research will best answer the question that is being researched.

A research design has the following three characteristics. Firstly the focus is on the end product i.e the kind of research result at which the research aims. The next characteristic is the research problem where the process starts and lastly the awareness of the importance of the kind of evidence required to address the research problem.

Broadly speaking, there are two kinds of design types, namely empirical studies and non empirical studies. Non – empirical studies deal with meta- analytical questions, theoretical questions, and philosophical questions. Empirical studies, in turn, are divided into the use of primary or existing data analyses, and the analysis of existing data is divided in turn into text data and numeric data. Following the guidelines laid out by Mouton (2001:55-56) it seems as if the research design that can be used for this thesis should be a combination of empirical and non – empirical studies.

One of the methods used in non – empirical studies is the literature review, described by Mouton (2001:179-180) as "studies that provide an overview of scholarship in a certain discipline through an analysis of trends and debates".

The literature review discussed in chapter two has, also brought to the fore a number of questions that can (and should) be addressed through primary research. For this purpose, empirical research in the form of a questionnaire and interviews is suggested.

For the purpose of this thesis, the above- mentioned methods have been selected, as exploratory research will bring about a better understanding of the administration of medication errors in Life Healthcare.

3.1.1 Empirical research

Mouton (2001:23 – 264) discuss the strengths and weaknesses particularly to survey research, and point out specifically to the sampling strength, flexibility and measurement strengths of survey (questionnaire), as a research method. Weaknesses of surveys are that they may, through standardization, represent the least common denominator, have difficulty in dealing with contexts of social life, and are subject to artificiality. The authors also make a point of the weakness that surveys have in terms of validity, while being strong on reliability.

The authors conclude their discussion on the strengths and weaknesses of survey research by stressing that an awareness of the weaknesses can partly help to solve them, but recommend that " you are on the safest ground when you can employ several research methods in studying a given topic" (Babbie & Mouton 2001:264). In this thesis, the survey is supported by the literature study.

In this section, the questionnaire (quantitative) and interview (qualitative) as data collection methods, are discussed. Based on the results from the literature review in Chapter 2, a questionnaire (Appendix A) was drawn up, and sent to staff members of Life Healthcare.

Part of the challenge of a good questionnaire is the order in which the questions are presented, as these can affect the answers provided by the respondents. The questionnaire should be designed bearing in mind sensitivity of the problem. The questionnaire used in this research uses the "reverse funnel format", with narrowly focussed/closed questions first asked, then moving to broader, more open questions. This order is helpful as it assists people to first reflect on smaller aspects/facets of the topic, before reflecting on the "bigger picture" (Baxter & Babbie 2004:186).All in all the questionnaire forms a coherence around the issue, namely, nursing administration errors in Life Healthcare. The questionnaire was designed to establish the personal details of the staff member, the work profile, the knowledge of policies and procedures and the reasons for non compliance if applicable.

The following section discusses the empirical methodology used in more detail.

3.2 Sample description

Overall four hospitals were analysed with respect to incidents analysis in terms of medication errors. The reason for choosing four units is detailed below. A total of twelve staff members were interviewed and a total of eight questionnaires were collected and collated. Two of the four hospitals were further selected for observation of ward rounds.

The criteria for the various selections is discussed below.

3.2.1 Hospitals

Four hospitals were selected in order to firstly identify root cause analysis within the administration process and secondly to assess the compliance with administration policies and procedures as outlined in Chapter 2 (cf 2.6.1)

These hospitals were named A, B, C and D for purposes of confidentiality. The acute hospital business is geographically divided in the coastal and inland regions.

The hospitals selected were consistent in reporting incidents, and included units that were medium and large in size, they represented all medical disciplines including high technology units e.g. Neurology and Cardiology and were busy, with occupancies of more than 56%.

Hospital C's incident forms were analysed to obtain an understanding of the trends of the errors and to gauge the user friendliness of the document.

3.2.2 Questionnaires

Two sets of questionnaires were sent (Appendices A and B) as follows :
The first questionnaire (Appendix A - SHEQ (Safety, Health, Environment and Quality)) covered areas of SHEQ and was sent to the selected four SHEQ coordinators who controls the safety procedures in respect of errors for completion.
The next questionnaire (Appendix B - Nursing Managers Questionnaire) covered areas of compliance to policies and which was sent to the selected four Nursing Managers for completion.

The eight questionnaires were drafted in line with important aspects as highlighted in Chapter 2 (cf 2.6.1.2). The questionnaires were sent via email to selected staff members (outlined in 3.2.3) and the completed questionnaires were returned via email. The responses were collated and summarised. The questionnaires were sent out in February 2006 and were returned within a period of 2 months.

3.2.3 Interviews

The interview is an alternative method of collecting survey data (Babbie 2004:263).

The interviewees were chosen on the basis that they designed policies and procedures, and workforce members (that is all the Nursing Managers at the Sample Hospitals) to evaluate whether policies were implement able and whether there was compliance with these.

Open – ended interviews were held with staff (refer listing below) of Life Healthcare, including the Executive Management Members , Nursing Managers and Pharmacy Managers as well as experts in the related field of discussion within the organisation in order to gain insight regarding their views on Nursing Medication Administration errors in Life Healthcare.

Two sets of persons were interviewed namely :-

Set 1 comprised of subject experts that included :

Lesley Fletcher - Legal, Training Specialist for Life Healthcare
Viviene Clack - Pharmacy Specialist for Life Healthcare
Sarah Stein - Operations Manager – Nursing at Life Healthcare
Eloise Van Niekerk - National Nursing Services Manager at Life Healthcare

Set 2 comprised of the following staff categories:
Nursing Services Managers – Sample Units (4)

Pharmacy Managers – Sample Units (2)
Safety Co - ordinators – Sample Units (2)

Interviews were personally conducted by the researcher and handwritten notes were taken. Two interviews were conducted by a team member. A brief background of the research was outlined to the interviewees. Those who requested anonymity in terms of their responses were assured that names would not be allocated to specific responses.

Although open – ended, the interviews were structured (refer Appendix B). This ensured that objectivity was maintained and addressed the research questions as thoroughly as possible. Responses were manually recorded and transcribed in a summary format.

3.2.4 Observation of Ward Rounds

The wards for observation were selected on the basis of the SHEQ questionnaire (Appendix A). Observation of ward rounds was conducted at two of the hospitals selected by the researcher. This observation process was very important to obtain an understanding of how the policies and procedures were implemented. It also assisted with the overall gaining of the understanding required to be able to assess compliance and the pitfalls associated with it.

Observations were done in the wards selected (cf 4.2.1) and the medication administration process was reviewed (cf 2.6.1). The observation findings were manually recorded and collated by the researcher (cf 3.4).

3.3 Data collection

As outlined in 3.2. questionnaires were sent via e mail to the selected respondents and the completed questionnaires were collected via email and then collated in an excel spreadsheet.

Interviews were conducted and manual notes were taken by the researcher and team member. Observation of ward rounds were conducted by the researcher and manual notes were made of the event.

The findings were either tabularised (cf 4.2.2) or written up in manual format according to themes (cf 4.1). SHEQ Questionnaire (refer Appendix B) was collected and analysed in tabular format (cf 4.2.5).

3.4 Survey Instrument

The questionnaires covered the areas that included the description of what the dedicated medication administration team entails, the benefits/advantages of this approach, the challenges and disadvantages of the approach, what can be done to improve the process and any other comments.

The interviews covered the areas that included the trends of errors, assessment in terms of compliance to policy and procedure, the need to amend the policy and procedure. The view of the interviews from management perspective to encourage reporting to establish root cause of errors for example day time staff versus night staff, full time employees versus agency staff (c.f 2.3).

3.5 Conclusion

The research design and methodology that was used in this mini - thesis was based on currently acceptable research methods, as specifically identified by the research text mentioned in this chapter.

Chapter 2 served the purpose of introducing the logical relationships among the concepts relevant to this thesis, while the next chapter, Chapter 4, will outline the results of the empirical evidence collected by the survey.

CHAPTER 4 : PRESENTATION AND ANALYSIS OF RESEARCH FINDINGS

4.1 Introduction

Chapter 4 provides a discussion of the results as pertaining to the research methodology as outlined in the third chapter. The purpose of the findings and its analysis is to redress the evaluation of nursing administration of medication errors in Life Healthcare.

4.2 Interpretation of research results

As outlined in Chapter 3, the research methodology included surveys in the forms of questionnaires and interviews and observation. These are presented within the following sections.

4.2.1 Questionnaire Findings

The question related to where most errors were found pointed to the use of a Medication Prescription and Medication Record (pink) Chart (refer Appendix C). This chart (Appendix C) outlines the process for the prescription and administration of medication. The key finding was that the current manual medication prescribing, dispensing recording and administration process using the Medication Prescription and Medication Record (pink) chart is fragile, prone to error, severely abused and is not a reliable tool for conducting the medication rounds.

Another finding was that the medication administration process can be made safer and more effective by allowing the nurses who are conducting the rounds to be freed from other duties whilst the rounds are in progress. Furthermore, the nurses can be assisted on their rounds by providing them with a medication administration schedule

that details the medication that each patient is to receive. This schedule negates the transcribing and illegible handwriting problems.

For medication safety to be maintained and improved in the hospitals it is necessary that an information technology is employed to assist in the administration of medication to our patients. This is supported by Kohn, Corrigan and Donaldson (1999).

A significant final finding was one that is easy to implement and will have immediate and long term benefits; the medication error recording and reporting method practiced by the hospitals can be readily improved with the application of an information technology based system.

4.2.2 Interview - Findings

4.2.2.1 Interviews with subject experts

4.2.2.1 (a) Interviewee :- Lesley Fletcher

An interview was conducted with Lesley Fletcher, the legal, professional and training specialist for nursing at Life Healthcare.

The main findings from the interviews was:

- Nursing staff know the policies and procedure. "They can recite them but do not follow them".
- Nurses always claim that they are too busy and advance this as a reason for incidents.
- Different hospitals (or even wards) follow different practices. Some hospitals do use delegation of tasks.
- Incident reporting varies and there is evidence of underreporting.
- The information on the incident reports and the statistics gathered make it difficult to identify trends as there is no root cause.
- There is little sharing of best operating practices within the group.

4.2.2.1 (b) Interviewee :- Viviene Clack

An interview was conducted with Viviene Clack, the Pharmacy Legal and Professional Specialist at Life Healthcare

Viviene Clack had been collating statistics for pharmacy errors and believed that the procedures and policies are relevant and well written. However, they may not be adhered to. Her feeling was the contributing factors to non-adherence could be process problems and segregation of duties.

She questioned the double checking in the process and is of the opinion that that staff were having too many distractions.

4.2.2.1 (c) Interviewee :- Sarah Steyn

An interview was conducted with Sarah Steyn, the Operations Manager: Nursing at Life Healthcare.

Sarah Stein highlighted that research done in their department has shown that the times with the highest activity in the ward are 5am to 10 am and then 5pm to 11pm. (This corresponds with our results for medication errors i.e. 1H00-7H00 and 7H00-13H00). Her suggestion was that there should be a policy which makes it mandatory to allocate individuals to medication administration on a daily basis, from the available staff, particularly during the times of highest activity. There should be a formal allocation list which will be audited. The trend detected was the need for staff to focus the on the task of administering medication.

4.2.2.2 Interviews with Nursing Services Managers, Pharmacy Managers, and Safety Coordinators.

4.2.2.2 (a) Hospital A

The staff interviewed considered that the bedside cabinets were more efficient than the medicine trolley in terms of storage of medication. It is better for individuals medication to be separate for purposes of control. Staff felt a simple measure like the patient name being displayed above the patients' beds on the wall or on the cabinet could alleviate the problem of identifying the patients medication.

The orthopaedic surgical ward was identified as the unit with the most medication error incidents in the period under investigation. There was poor adherence to the procedure due to high turnover in patients being admitted and discharged, high volume of theatre cases and times of medication administration that occur concurrently with other activities, for example, doctor rounds, serving meals, admissions or discharges.

On the question, "Do you think your hospital reports incidents accurately", Hospital A has an anonymous incident recording document that was reviewed and condensed to a one page questionnaire for use in a trial implementation at the Hospital from the 5th of April until the 19th of April 2006. The document highlights findings discussed in the paragraph below.

The most common problems identified which contributed to errors are illegible handwriting, medication administered at wrong times, unmarked medication, allergies not recorded, did not go back to give medication if a code "E" was used on the pink chart which resulted in the round being "skipped" and the patient not receiving the required medication.

Other comments included the following that it is time consuming to check all patients, the document is lengthy to complete.

4.2.2.2 (b) Hospital B

The staff admitted to being unable to adhere to the checking requirements of the procedure. The reason stated was that the times of medication administration occur simultaneously with other activities for example doctor rounds, serving meals, admissions or discharges.

Two people are responsible for the administration of medication, each administering to patients in one half of the ward. The registered nurse (RN) administers medication on one side and the enrolled nurse (EN) on the other.

Times for medication administration were not written on the prescription chart in advance so that if a new nurse is on duty the following day/shift, they will be uncertain as to when to dispense medication.

4.2.2.2 (c) Hospital C

Poor adherence to written procedure was found and the checking is not done in accordance to the prescribed procedure (cf 2.6.1).

As outlined in chapter 3 (cf 3.2.1) an analysis of incidents reports was done at Hospital C. This sample of errors gives the non-medical reader an overview of the types of errors that are experienced at the hospitals. It also highlights the fact that proper root cause analysis is not being done:

Table 2.1 Hospital C : Analysis of Incidents

Error	*Reason*	*Details*
Pharm did not change name of drug when printing sticker	Work Overload	
Nursing staff did not read Pharm instruction		
Medication not given as ordered	Staff Tired	
Medication not given as ordered	Unit very busy	
Medication found in staff tea trolley	None	Found 6 Purata tablets
Discrepancy with drugs	Night Duty	1 Valium 5 mg short
Incorrect drug dispensed	Lack of training	Ceftriaxone given not Augmentin
Incorrect drug dispensed EM Cupboard	Lack of training	Pharm picked up that titralic was given instead of Ramace 5 mg
Incorrect strength of medication given	Incorrect label	Augmentin 375 given - 625 mg was prescribed
Medication not given as ordered		Pink chart not checked for change in instruction
Incorrect medication ordered	Lack of training	Error in transcription
Medication not given as ordered		Pharm picked up error in stock
Medication not given as ordered		Pharm picked up error in stock - Credit stock when not required
Incorrect drug dispensed EM Cupboard	Lack of training	Celestene was ordered but Celestamine was given to child
Incorrect drug dispensed EM Cupboard	Busy in unit	Ampicillin was prescribed but Apen Campicillium + Cloxacillin was taken out of cupboard
Medication not given as ordered	Busy in unit	Napacod prescribed (Paracetamol + Codeiene)- Napamol (Plain) given

Error	*Reason*	*Details*
Incorrect route of analgesia followed	Staff misread instruction	DF 118, 50 mg imi given at 0230 - should have been DF 118, 30 mg PO 6 hrly
Incorrect TTO given to patient	Failure to check	2 patients were discharged, left unit with each others TTO's
Medication not given as ordered	Failure to check	Emergency cupboard stock not checked - Adalat 10mg prescribed, Adalat 5mg in cupboard.
Medication not given	Tabs not given in error	Morning dosage not given in error - pick up later by staff member
Medication not given as ordered	Sr did not chart what she did	Incorrect dosage given to patient - Instead of 7.5mg only 5mgs were given
Medication not given as ordered	Label error	Incorrect medication given as a result of label error
Medication not given	Staff was not pro active	Morphine IV was not given on admission - Oral medication not pursued.
Medication not given as ordered	Lack of training	Failure to check transfer documents, Night staff did not complete admission
Medication not given as ordered	Lack of training	Medication given at incorrect time.
Medication not given	Protocol not followed	Patients name written in register but meds not given

4.2.2.2 (d) Hospital D

During the course of the interviews it was found that this hospital had just implemented a new system, different from policy and procedures as highlighted in chapter 2 (cf 2.6.1) for medication administration. The system was implemented on the 1st of March 2006, and this report is based on observation from the implementation date to the 19th of April 2006.

In the new system, a staff member was allocated to the task of medication administration daily on day duty. Registered nurses were allocated to medication administration on a rotation basis (enrolled nurses were successfully used at times). Medication administration was this nurse's first priority, however, she also helped with routine tasks when her medication round was complete. This was largely dependent upon the occupancy of the ward and the turnover of patients.

The procedure followed daily by the nurse allocated to the administration of medication commenced with the nurse being given a medication status report from the night staff upon arrival. The nurse then prepared for the medication administration round by packing a trolley with the medication, medicine glasses, keys, reconnection devices, saline for intravenous medication and then completed the medication round for the whole ward. The nurse kept a note book with a list of the patients' medication schedules to help remember when the patients should receive their medication.

The responsibilities of the nurse tasked with administration of medication includes the administration of all medication and those analgesics which should be administered at prescribed intervals. Analgesics which are administered upon the request of the patient are the responsibility of the nurse allocated to take care of all the patients other needs for that day, the administration of medication which should be given once only (stat doses), the tracking the route of the medication charts. After the doctor writes the prescription the medication chart is left in the patient file. The nurse tasked with medication administration ensures that the chart reaches the pharmacy and is returned to the ward. Only in the case of stat doses (medically accepted term) are the charts taken immediately to the pharmacy and the administration of analgesia for all patients

returning from theatre whilst the other ward staff are on tea or lunch and the rest busy with admissions and the pre-operative preparation of patients who are going to theatre. Pre-medication is the responsibility of the theatre nurse or registered nurse.

The observed benefits of the new system included :- a decrease in medication incidents – nil incidents reported, with only two near misses (medically accepted term) (SHEQ alerts) on 3 March 2006; continued chronic medication as previously there were delays in ensuring that patients received their chronic medication; a reduction in patient complaints regarding waiting for admission, medication or dressings; an increase in time for junior staff to do basic nursing care; an improvement in teamwork, with clear delegation of duties; improved patients' education as a result of the medication nurse focused on teaching patients about their medication and the administration thereof, and improvement in pain control as the analgesia was administered timeously and problems were being picked up more quickly due to the review of medicine being done daily.

General comments from nursing staff from all hospitals included :-

There were complaints that the incident reports are not user-friendly, which may have contributed to the absence of a root cause analysis.

Due to the continuous influx of a wide variety of generic substitutes, nurses are not always familiar with the medication dispensed from the pharmacy. This is exacerbated by the fact that the label printed by the pharmacy and attached to the medication only displays the name of the generic or substituted drug that was dispensed, and the original name that was prescribed and written up by the doctor is not added to provide clarity.

The Medication, Prescription and Administration Record charts were not always readily available at the time of medication administration; they were often in the pharmacy being used to dispense the medication.

The Medication, Prescription and Administration Record charts were not always completed correctly and substitute drugs were not written on the charts by the pharmacists which led to confusion in the wards.

Some of the suggestions from nurses were:

- Fixed medication cupboards were preferred to the medication trolley.
- Task-oriented nursing was the preferred mode of working.

4.2.3 Observation of ward rounds in hospitals - Findings

Prior to conducting ward rounds, questionnaires (Appendix A) were sent out to the SHEQ (Safety, Health, Environment and Quality) Coordinators, to guide in the selection of the wards to be observed (cf 3.2.2 and 3.2.4).

Table 3.1 Observation of Ward Rounds - Findings

	Observation group	Distribution
a)	Nature of the errors	36% wrong dose 12% wrong drug 13% wrong time 6% wrong patient 5% wrong route 28% other
b)	Route of administration when the errors occurred	33% oral 29% Intravenous 5% subcutaneous 5% Intramuscular 2% rectal 1% vaginal 25% other
c)	Nursing staff grades making the errors	80% RN Registered nurse 19% EN Enrolled nurse 1% ENA Enrolled nursing assistant

The high number of nursing errors attributable to registered nurses in comparison with the other nursing grades is due to the prevailing practice whereby the nursing staff regard medication administration mainly as a registered nurse's role. This was consistent with Lesley Fletcher's findings in her hospital visits (cf 4.2.2.1).

Most incidents occur between 01h00 and 07h00 followed by 07h00 and 13h00.

These times were confirmed by Lesley Fletcher (cf 4.2.2.1) as corresponding with times of highest activity in the wards as identified by a study conducted in the nursing division of the company between 2002 and 2004. This is the time when the doctors rounds are conducted, patients are prepared for theatre, patients are admitted to the wards and administrative tasks are performed in addition to the medication rounds.

Ward rounds were then observed in the selected wards.

The wards selected in each of the hospitals were:

Hospital	**Ward**
C	St Joseph-medical ward
D	Mixed discipline- medical & surgical

The Nursing Audit Tool (cf 2.4) was used to assess the selected wards' adherence to the written procedure.

The findings included the following :

Firstly, it was observed that there was a good overall knowledge of the procedure, but nonetheless the procedure was not adhered to. The cross checking that is required to be done during the rounds was often not done. Commonly cited reasons for not complying with written procedures were:

1. The nurse was "too busy", owing to the wide variety of tasks and responsibilities they were to fulfil. Therefore they did not have time to do the proper checks.

2. They delayed giving medication because the Medication Prescription and Administration Record (pink) charts were still in the pharmacy and they did not have ample time to follow up outstanding prescription charts.

Secondly, there were different practices with regards to medication administration amongst the hospitals. On the ward rounds it was found that medication was stored in different places in the wards:

- At the Hospital C in the medicine trolley
- At the Hospital D in the bedside medication cabinets

4.3 Conclusion

From the findings above many observations were noted as mentioned below.
The root cause analysis in most instances was not conducted properly resulting in the root cause not being identified and hindering the formulation of any preventative and corrective measures.

There was under-reporting of errors. This was evident from the findings at Hospital D and was corroborated by Lesley Fletcher. One of the reasons for underreporting was that the incident form is not "user friendly" in that the document is six pages long, printed in small font, poor presentation and does not lend itself to easy reading and trend analysis. Refer Appendix C.

There were different practices in the hospitals with regard to the administration of medication.

There was overall knowledge of policies and procedures, but poor adherence. The most commonly cited reasons for failure to adhere to the written procedure were they were "too busy" and "agency staff" (cf 2.3) were unfamiliar with the ward and did not care. However a major aspect of not compliance to policy was that staff did not double check the patients' identities when giving medication.

The most common error reported was the wrong dose of medication being given to the patient. The most common route lending itself to errors was that of oral administration. Most incidents occurred between 07H00 and 13H00. This corresponds with the times of highest activity in the wards.

The Medication, Prescription and Administration Record charts were not always readily available at the time of medication administration, resulting in delayed or missed medication. The Medication, Prescription and Administration Record chart was not a reliable instrument for the administration of medication because it was not being completed (cf 4.2.1).

These lessons, together with considerations from Chapter 2, are put forward as recommendations in Chapter 5.

CHAPTER 5 : CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Chapter 4 provided an overview of the data analysis and findings, in view of the research methods used as described in Chapter 3. In this chapter, conclusions are drawn and recommendations are made, with the view of improving the nursing administration of medication errors in Life Healthcare.

5.2 Overview of the Investigation

As set out in Chapter 1, this study is aimed at evaluating the medication delivery process at Life Healthcare with a focus on the nursing involvement. In the introduction (cf 1.1) the medication administration cycle was outlined as well as the various potential errors as outlined in the medication minefield.

Chapter 2 addressed the aim of examining literature on policies and procedures and practices which assist in drawing conclusions and making recommendations in this chapter.

Chapter 3 provided an outline of the research methodology used within the investigation. Chapter 4 outlined the findings and data analysis in terms of empirical research done, and conclusions were drawn.

5.3 Synthesis of significant findings and conclusions

The main concern of this study is the Evaluation of the Administration of medication errors in Life Healthcare with a specific focus on the nursing contribution and impact. Within these parameters the following recommendations are made.

5.3.1 Dedicated staff for the medication administration rounds

It is recommended that staff members who are assigned to the task of administering the medication process enjoy a dedicated assignment; that they are freed from other duties while the rounds are in progress (cf 4.2.3)

The recommendation requires that a procedure is developed to assist with the implementation of the methodology and that the control of administration of medicine procedure (c.f 2.6.1) is extended to cover the process.

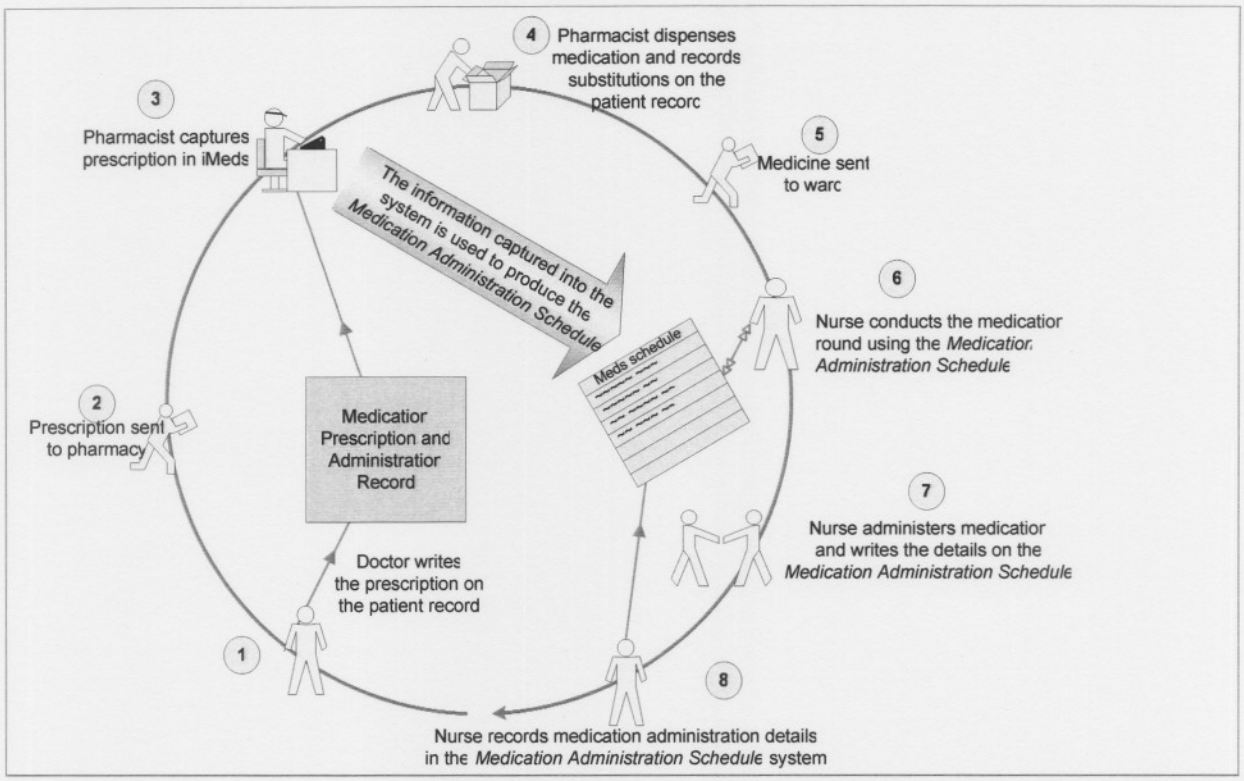
It is recommended that medication rounds are administered by an enrolled (staff) nurse so that the more qualified registered nurse is available to evaluate the execution of the patients' care plan and check the medication prior to administration.

5.3.2 Implement scheduling system to produce a medication administration schedule

It is recommended that a system to produce Medication Administration Schedules is implemented to assist the administration of the medication rounds in the Life Healthcare hospitals.

The system should produce a schedule that contains all the correct and relevant information for the nursing staff to conduct a rational, accurate, complete and efficient uninterrupted medication round. This is illustrated in the following diagram:

Figure 5.1 Medication Administration Schedule Flowchart – Life Healthcare Policies and Procedures Manual, 2007



The recommendation requires that IT development work is done before it can be implemented. It would require the patient administration system, iMeds which is the in- house billing system utilised by Life Healthcare to be modified to:

1. Capture of the medication prescription during dispensing:
   Provide for the information that the pharmacist captures as the prescription is being filled to be stored for subsequent use:
   - The prescribed medication.
   - The substitution or generic medication.
   - Dosage and route of delivery.

This process will highlight and acknowledge the precautionary information from the patients' records; the allergies and other medication.

2. Producing of Medication Administration Schedules.
   Once the pharmacist has entered the medication order there is sufficient information available for the medication round to be scheduled. The system can print a Medication Administration Schedule that shows which patients require medication, what medication they require, when last they received it. It should also show what additional medication they require (medication brought from home by the patient).

3. Capturing a record of the medication that was administered.
   This function is used to record the outcome of the completed medication administration round. This will be done by the ward secretary.

4. Enquiry on medication and meds rounds.
   This is a management tool that is used to track what medication has not been administered, the time of the next rounds, and the patient's medication history for the hospitalisation period.

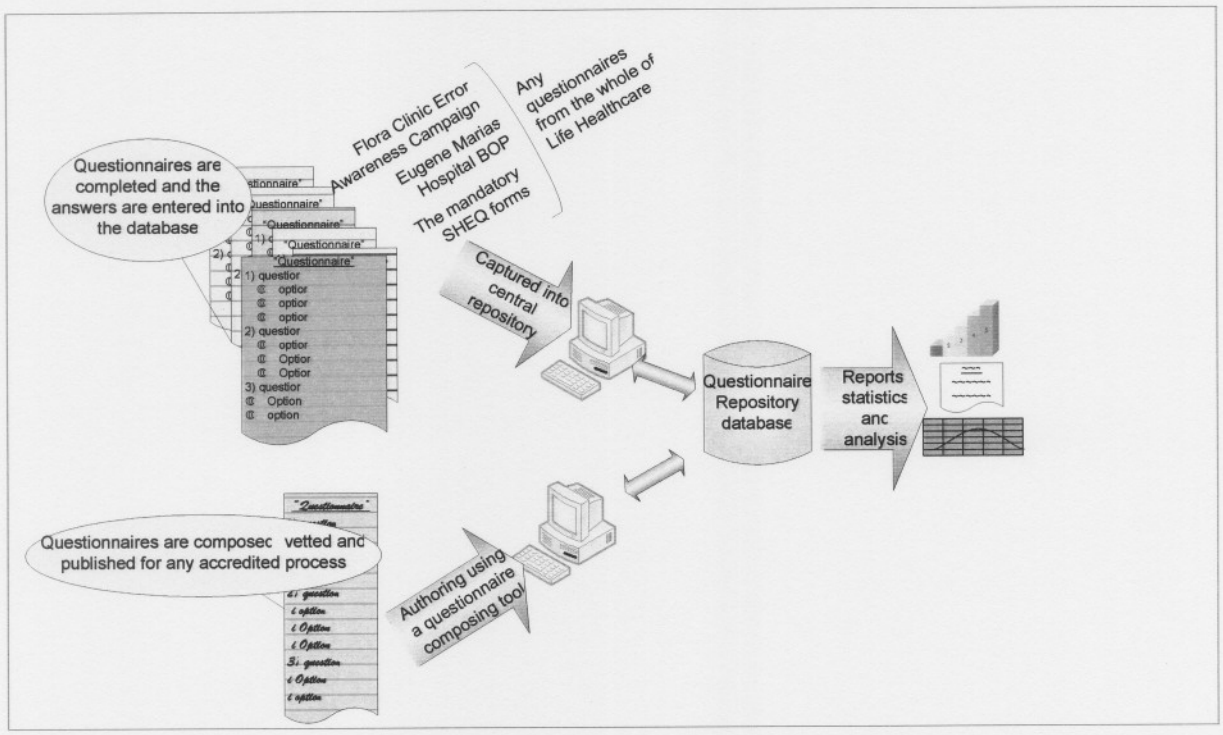
The system will require a project to be defined and completed for its implementation.

5.3.3 A system to record, report and medication errors and assist in determining the root cause.

A computer system is proposed that will assist with the gathering of the relevant information to establish the root cause of the errors and the system will further provide statistics as illustrated in figure 5.2 below. Central to the concept is an administrative tool that will allow questionnaires to be set up and provided to the staff that will complete them. The tool will assist to set up questions and group

them into questionnaires. The tool allows questionnaires to be tailored to support the quality initiatives at specific care-units and still contribute to the corporate pool of information and it will print a paper version of the questionnaire to accompany the nurses on their administrative rounds.

Figure 5.2 Information Technology Administration Tool – Life Healthcare Policies and Procedures Manual, 2007



A information technology administration tool provides many benefits that include the capturing of the observations into the computer system, this can be also done by non-nursing staff. The administrative tool also provides for the classification of questionnaires and questions. The questionnaires will be authored and refereed by designated staff and will function within a security system. Lastly the tool will provide a cohesive source of information about the errors and a uniform protocol for the reporting errors and provide management reports.

This solution satisfies all the principles stated in Chapter 3 (cf 3.2.2). The amount of time and effort that will be required to develop and implement the tool should not

exceed four months. The build and implementation of the system will require that a project be defined and completed for its implementation.

5.3.4 Investigate the appropriateness of the information printed on the medication label

As highlighted in the analysis of the incidents reports (cf 4.2.2.2) many errors are attributable to a gap in the knowledge of nurses of the names of generic or substituted medication. In some instances the pharmacist omitted to write the substitutes' names on the Medication Prescription and Medication Record chart next to the doctors prescribed name for the drug. Also, drugs in the emergency cupboard are not labelled correctly.

These lead to errors because the nurse administering the medication does not know if the packet of medication that she is handling, is what has been prescribed, as the names are different and she has no reference or does not check with a pharmacist on call.

Recommendations include the review of information on the label and if possible the inclusion of the original prescribed name and the substituted drug with suitable differentiating text, the inclusion of the substitute name on the Medication Prescription and Medication Record (pink) charts, the need to have regular training in basic pharmacology for nurses and the need for standardized management regarding stocking and labeling of the medicine in the emergency cupboard.

The literature clearly presents that Administration of Medication errors in Life Healthcare has been identified as an area to be redressed (cf 1.1).

5.4 Conclusion

The following needs to be actioned as concluded from the empirical research conducted :-

- Create a culture in the care-units that encourages staff to report medication errors.
- Positively reward good error reporting so that a complete record of all medication errors can be analysed. This will give a foundation for measuring improvement and providing information for managing the problem.
- Accurate root cause analysis of the errors is crucial in implementing appropriate and effective preventive and corrective measures. The form must be reworked to make it "user friendly".
- Dedicate the responsibility for the task of administering the medication rounds.
- Install medication cabinets next to all patients' beds to assist to reduce the possibility of the patient receiving the correct medication. This together with reemphasising the patient checking procedure will assist in correct patient identification.
- Standardise the processes throughout the business and ensure that all units follow the best operating practices.
- Change the medication labels to reflect the prescribed and substituted medication names. This will also help alleviate the error problems experienced when nursing staff use the emergency cupboard after hours.
- Implement a computer solution to assist the preparation and administration of ward rounds to substantially contribute towards implementing the protocols and reducing errors.
- Improve patient knowledge and education whilst in hospital by informing them of the processes and procedures relevant to their treatment. This will include the medication that they will receive.

The provision of quality care is viewed as a major differentiating factor in gaining a competitive advantage in the provision of private healthcare. Reducing nursing medication administration errors is an integral part of improving the quality of patient care.

By implementing the recommendations suggested :- dedicated staff for the medication administration rounds (cf 5.3.1), medication administration schedule, IT solution – Administration tool and medication label information accuracy, Life healthcare can reduce the medication errors and not only provide quality healthcare services but have a competitive advantage by doing so.

BIBLIOGRAPHY

Babbie, E. 2004. *The practice of social research (10th edition).* Thomson Wadsworth: UK.

Babbie, E. and Mouton, J. 2001. *The practice of social research.* Oxford University Press : Cape Town.

California HealthCare Foundation by Protocare Sciences. 2001. *Addressing Medication Errors in Hospitals: A framework for developing a Plan.* [http://www.chcf.org], Retrieved on 1 March 2006.

California HealthCare Foundation by Protocare Sciences. 2001. *Addressing Medication Errors in Hospitals: Ten Tools*
[http://www.chcf.org]. Retrieved on 1 March 2006.

Kohn, L. T., J. M. Corrigan, and M. S. Donaldson, ed. *To Err is Human: Building a Safer Health System. Washington, DC: National Academy Press; 1999.* [http://www.nap.edu/catalog/9728.html]

Life Healthcare Reports Reviewed :-

- Annual Report : 2005 and 2006
- Statistics Report : 2006
- Business Review Supplement : 2006
- Policies and Procedures Manual : 2006

[http://LifeGateway], Retrieved between March - July 2006.

Medicines and Related Substances Control Act 101 of 1965 after amended by the Medicines and Related Substance Control Amendment Act (Act 90 of 1997)

Appendix A - SHEQ Questionnaire

Addressing nursing medication administration errors in Life Healthcare.

HOSPITAL:

SHEQ CO-ORDINATOR:

1. How many medication administration errors attributable to nursing were reported for the period October 2005 to February 2006?
2. What was the nature of the errors?

Error	Number	Percentage of total errors
Wrong patient		
Wrong drug		
Wrong dose		
Wrong time		
Wrong route		
Other (specify)		
Total		

3. What was the route of administration for the errors?

Route	Number	Percentage
Oral		
Intravenous		
Intramuscular		
Subcutaneous		
Vaginal		
Rectal		
Other (specify)		
Total		

4. When do most errors occur?

Time range	Number of errors	Percentage
07H01-13H00		
13H01-19H00		
19H01-01H00		
01H01-07H00		

5. Which categories of staff are involved in the errors?

Staff Category	Number of errors
Registered nurse	
Enrolled nurse	
Enrolled nursing auxiliary	

6. Which 2 wards reported the most errors?

Ward	Number of errors	Percentage of total errors reported

7. What are the most commonly stated reasons/causes for the errors?

Appendix B - Nursing Managers Questionnaire

Addressing nursing medication administration errors in Life Healthcare.

HOSPITAL:

NURSING MANAGER:

1.How many medication administration errors attributable to nursing were reported for the period October 2005 to April 2006?

2.What was the nature of the errors?

Error	Number	Percentage of total errors
Wrong patient		
Wrong drug		
Wrong dose		
Wrong time		
Wrong route		
Other (specify)		
Total		

3.What was the route of administration for the errors?

Route	Number	Percentage
Oral		
Intravenous		
Intramuscular		
Subcutaneous		
Vaginal		
Rectal		
Other (specify)		
Total		

4.When do most errors occur?

Time range	Number of errors	Percentage
07H01-13H00		
13H01-19H00		
19H01-01H00		
01H01-07H00		

5.Which categories of staff are involved in the errors?

Staff Category	Number of errors
Registered nurse	
Enrolled nurse	
Enrolled nursing auxiliary	

6. Is the Nursing Policies and Procedures being complied with ?

7. If not what is the reason for the non compliance ?

8.What are the most commonly stated reasons/causes for the errors?

Life Group HEALTH CARE

MEDICATION PRESCRIPTION & ADMINISTRATION RECORD

CLINICAL PHARMACY / ANAESTHETIC QUESTIONNAIRE

Appendix C

CARD No.

HEIGHT:_____ WEIGHT:_____

ALLERGY STICKER

ALLERGIES / REACTIONS: _____

BLOOD GROUP: _____ Hb _____ gm %

PHARMACY PRACTICE NO.

DIAGNOSIS:

PREVIOUS ILLNESS (* CIRCLE RELEVANT)	YES	NO	FAM. HIST.	NO.	DETAILS OF ILLNESS
1. HEART DISEASE eg. Angina, Thrombosis, Congenital, Rheumatic Fever *					
2. BLOOD PRESSURE HIGH or LOW (if so any treatment) *					
3. VARICOSE VEINS / THROMBOSIS OF VEINS					
4. ASTHMA, BRONCHITIS, TB other lung disease *					
5. JAUNDICE / other liver conditions eg. HEPATITIS					
6. DIABETES					
7. GASTRIC/DUODENAL ULCER, HIATUS HERNIA, DIARRHOEA *					
8. KIDNEY or BLADDER DISEASE *					
9. PORPHYRIA (patient or family member)					
10. GENETIC / CONGENITAL HISTORY					
11. EPILEPSY other neurological/muscular disorders or weakness					
12. DEPRESSION or psychiatric disorders					
13. EXCESSIVE BLEEDING after extractions, injury or operations					
14. BACK / NECK PROBLEMS eg. Whiplash, ARTHRITIS					
15. ANY RECENT ILLNESS eg. cough or cold *					
16. ARE YOU TAKING: STEROIDS/CONTRACEPTIVES/CORTISONE					
16. ARE YOU TAKING: OTHER MEDICATIONS eg. ANTICOAGULANT *					
17. ARE YOU: RECEIVING CHEMO/RADIATION THERAPY					
17. ARE YOU: PREGNANT L.M.P. / /					
17. ARE YOU: BREASTFEEDING					
18. DO YOU: SMOKE NO _____ /PER DAY					
18. DO YOU: TAKE ALCOHOL (TYPE) _____					
18. DO YOU: CONSUMPTION _____ /DAY _____ / WEEK					
18. DO YOU: WEAR CONTACT LENSES, FALSE TEETH, CROWNS *					
18. DO YOU: HAVE A PACEMAKER / HEART VALVE *					

MEDICATION TAKEN AT HOME OR BROUGHT IN (INCL. NATURAL MEDICATION)	DOSE	QTY

SURGICAL HISTORY

DATE	OPERATION AND ANAESTHETIC PROBLEMS (eg. MALIGNANT HYPERTHERMIA/ POST-OP NAUSEA/VOMITING)

DATE	PREMEDICATION PRESCRIPTION AND ADMINISTRATION RECORD	DOSE & SITE & TIME	SIGNATURE

THIS SECTION MUST BE COMPLETED BY PATIENT / GUARDIAN

1) I THE PATIENT/GUARDIAN AGREE THAT THE ABOVE HISTORY AND INFORMATION IS COMPLETE, TRUE AND CORRECT
2) I HEREBY CONSENT TO PRODUCT SUBSTITUTION AS AGREED BY MY DOCTOR

DATE:_____

PATIENT/GUARDIAN SIGNATURE:_____

NURSE SIGNATURE:_____

DOCTOR'S CONSENT FOR GENERIC SUBSTITUTION

MEDICATION WILL BE SUBSTITUTED FOR A GENERICALLY EQUIVALENT MEDICATION UNLESS THE PERSON PRESCRIBING INDICATES **"NO SUBSTITUTION"** NEXT TO THE ITEM PRESCRIBED.

IF DRUG NOT ADMINISTERED WRITE LETTER IN DOSE COLUMN

A: PATIENT AWAY FROM WARD
B: VOMITING ETC.
C: PATIENT REFUSED DRUG
D: NIL BY MOUTH
E: MEDICATION NOT YET RECEIVED

STOP/START MEDICATION

DOCTOR TO DELETE PREVIOUS OR SUBSEQUENT DAYS AND INDICATE **STOP OR START**

NAME	SIGNATURE

ALLERGY STICKER

DESCRIBE ALLERGY:

DATE TIME	MEDICATION/QUANTITY ISSUED & SIGNATURE	WARD CHECK	DATE	DOCTORS PRESCRIPTION, SIGNATURE & QUALIFICATIONS	DATE: TIME	DOSE	SIGNATURE
			1	DURATION / QUANTITY:			
			2	DURATION / QUANTITY:			
			3	DURATION / QUANTITY:			
			4	DURATION / QUANTITY:			
			5	DURATION / QUANTITY:			
			6	DURATION / QUANTITY:			
			7	DURATION / QUANTITY:			
			8	DURATION / QUANTITY:			
			9	DURATION / QUANTITY:			
			10	DURATION / QUANTITY:			

WARD MEDICATION ADMINISTRATION RECORD

NAME	SIGNATURE	NAME	SIGNATURE	NAME	SIGNATURE	NAME	SIGNATURE

DATE:			DATE:			DATE:			DATE:			DATE:		
TIME	DOSE	SIGNATURE	TIME	DOSE	SIGNATURE	TIME	DOSE	SIGNATURE	TIME	DOSE	SIGNATURE	TIME	DOSE	SIGNATURE

DOCTORS PRESCRIPTION

DATE	TIME	INSTRUCTIONS / TELEPHONIC ORDERS	SIGNATURE

DOCTOR'S PRESCRIPTION:

- ● ONCE ONLY / STAT DOSES
- ● INTRAVENOUS THERAPY (NOT ROUTINE MEDICATIONS)
- ● ENTERAL FEEDS (PRESCRIPTIONS ONLY)
- ● BLOOD
- ● TTO'S (AFFIX STICKER)

DATE	MEDICATION	DOCTOR'S SIGNATURE AND QUALIFICATIONS	DATE	PHARMACY ISSUE	TIME GIVEN	SIGNATURE

CREDIT

DATE	ITEM	QTY	RN'S SIGNATURE	RECEIVED	CREDITED	SIGNATURE

Appendix D :- The Life Healthcare Balanced Score Card

LIFE HEALTHCARE QUALITY MANAGEMENT MEASURES – AS AT APRIL 2006					
ITEM	**MEASURES**	**GOALS FY2006**	**RESULTS**		
			Actual Month	**Actual YTD 2006**	
			No	**No**	**% / Rate**
Customer Satisfaction	***Customer Feedback***				
(Acute care Hospitals)	* Q evaluator	95%	76,563	473,874	96.5%
	* Comment cards	-	2,323	12,100	-
Customer/patient risks and Trends	***Customer / Patient incident rate (per 1,000 PPDs)***	100% reporting FY06			
Acute Care Hospitals	* Major	< 2	106	824	0.94
	* Total	< 7	618	4,411	5.03
Life Esidimeni	* Major		8	34	0.06
	* Total		23	296	0.52
Life Occupational	* Major		0	0	0.00
Health	* Total		0	0	0.00
	Nosocomial infection rate (Acute care only)	< 5% (focus on accurate and correct reporting)	-	-	0.77%
	* Ventilator associated pneumonia (VAP)	Compliance to preventative actions	24	170	-
	* Surgical site infections (SSI)	-	18	181	-
	* Central line infections (CLI)	-	27	163	-
	Alerts / Need Q Quarterly trends	2000 / Quarter	1,643	9,019	-

Quality Management	*Integrated Quality Management System reviews*	100% compliance by September 2006	25	25	50%
	Quality Management Self Audits (2 per year)	100% compliance by September 2006	-		41%
	Infection Control Self Audits	100% compliance by September 2006	-		53%
	Nursing Care Round & Legal Audits Fully Functioning	100% compliance by September 2006	Reported Quarterly		
	Pharmaceutical care - Service Levels	98%	97.3%		96.6%
	Link Nurse program implementation (Acute care only)	100% compliance by September 2006	-		76%
	HBA Risk Assessment in place	100% compliance FY06	-	-	75%
Employee Health & Safety	***Employee Incident Rate (per 200,000 labour hours)***	100% reporting FY06			
Acute Care Hospitals	* Major	< 1	10	40	0.61
	* Total	< 12	87	659	10.00
Life Esidimeni	* Major	< 2	0	3	0.22
	* Total	< 7	5	60	4.39
Life Occupational	* Major	< 2	0	0	0.00
Health	* Total	< 8	1	4	2.01
	Confirmed Occupational Diseases (also included in Employee Health & Safety incidents)	100% reporting FY06	4	10	-
Environment	***Environmental incidents reported***	100% compliance FY06			
(including Life Esidimeni and	* Major	< 2 / year for the group	0	0	-
Occupational Health)	* Total	< 10 / year for the group	2	12	-

Appendix E :- Medication Error Tracking Document

What follows is an extract from the document *Addressing Medication Errors in Hospitals. Ten Tools California HealthCare Foundation by Protocare Sciences (2001). Addressing Medication Errors in Hospitals: Ten Tools [http://www.chcf.org], (Accessed 1 March 2006).*

This form supports the tracking, collection and systematic categorization of data on medication errors. This is the first step in:

- Quantifying the types of errors that occur
- Identifying potential solutions
- Setting priorities

To ensure medication errors are tracked and categorized in a uniform manner, the document/report should be reviewed by individuals who understand the medication administration process. This can be done by the:

- Hospital risk management team
- Hospital Q^e Power team
- SHEQ and Quality Process Manager
- National Peer Review Team

After the hospital has implemented interventions to prevent medication errors, it can use the data collected to measure the impact of those interventions. By making the tracking of medication administration errors an ongoing process it will contribute to:

- Hospital continuous quality improvement initiative
- Performance improvement
- Company will be better equipped to monitor errors and
- Identify new opportunities to prevent them.

Directions for Use

Section 1: Patient Information

This information will allow the reviewer or review team to access the patient's medical records if additional information is necessary

Section 2: Medication Prescription Information

This section describes the medication error in terms of the medication involved and the outcome of the error

Section 3: Medication Error Categorization

This section can be completed be the individual reporting the error or by the reviewer of the report.

- **Medication Class Involved**
  This will enable the hospital to identify the types of medications most frequently involved in medication errors.

- **Categorization of Medication Error**

This will classify whether the medication error was the result of an error in:

- Prescribing / Prescription
- Transcribing / Prescription Verification
- Dispensing
- Medication administration
- Medication monitoring

Also note if the error was "intercepted" before the medication reached the patient.

- **Prescribing / Prescription Error:** an error that originated from written medication error.
- **Transcription / Verification Error:** an error that originated during transcription of the original physician prescription and or transcription of the physician prescription to the pharmacy or nursing staff.
- **Dispensing Error:** An error originating from the point that medication was dispensed from the pharmacy. This includes patient specific medication as well as ward stock (non-patient specific). It also includes incorrect admixtures of medications within the pharmacy and dispensed to the ward for administration of the dose.
- **Administration Error:** An error originating during the process directly associated with medication administration at the nursing unit. These errors include selection of the wrong medication from a patient's medication "bag"/box or from a dispensing cabinet, or incorrect admixture of a drug at the nursing unit.
- **Monitoring error:** An error originating from a lack of necessary monitoring or lack of interpretation/appropriate action for selected drugs e.g., drug level monitoring for certain antibiotics, antiarrhythmics, anticoagulants, anticonvulsants, etc.

Possible Cause of Medication Error

This section will identify the most common causes for medication errors and can be used in quality improvement effort.

- **Patient knowledge deficiency**
- **Medication knowledge deficiency**
- **Non-adherence to Policies and Procedures**
- **Miscellaneous**

Medication Error Tracking Document

Section 1: Patient Information

Patient Name:	**Patient Hospital ID:**
Date of Report:	**Name of Reporter:**
Patient Location at time of Error:	**Date and Time of Error:**

Section 2: Medication Prescription Information

Name of Medication:
How was the prescription Written:
Did the patient receive the Medication? □Yes (If yes, what did the patient receive - drug, dose, route, time of administration?) □No (If no, how was the error intercepted?)
What was the outcome? □Adverse drug event occurred. Describe injury that occurred and actions taken to minimize injury. □Adverse drug event did not occur (no apparent patient injury of ill effect noted).
Please describe in detail the occurrence of the error:
Provide any suggestions or recommendations regarding how to prevent future occurrences of this type of error:

Section 3: Medication Error categorization

Medication Class Involved (tick one box)	
⊏ Antihistamine	☐ Diagnostic or Radioactive Agent
☐ Antibiotic	☐ Electrolytic, Caloric, Water Balance
☐ Antineoplastic or Immunosuppressive	☐ Eyes, Ears, Nose, Throat Preps
☐ Autonomic	☐ Gastrointestinal
☐ Blood or Blood Products	☐Hormone
☐ Blood Formation Coagulants	☐ Pain medication
☐ Cardiovascular	☐ Other:
☐ Central Nervous System	

Categorization of Medication Error	
Prescribing / Prescription Error(check all that apply)	**Was error intercepted before reaching the patient?**
☐ Prescription written on wrong patient	☐ Yes, during transcription/verification
☐ Prescription written for wrong drug	☐ Yes, during dispensing
☐ Drug not appropriate for indication	☐ Yes, during administration
☐ Patient with allergy to drug	☐ No
☐Drug-drug or drug-disease interaction	☐ Other Comments:
☐ Prescription written for wrong dose/dose not adjusted	
☐ Prescription written for wrong dosing schedule	
☐ Prescription written for wrong route	
☐ Other:	
Transcription/Verification(check all that apply)	**Was error intercepted before reaching the patient?**
☐ Prescription transcribed on wrong patient	☐ Yes, during dispensing
☐ Prescription transcribed for wrong drug	☐ Yes, during administration
☐ Prescription transcribed for wrong dose	☐ No
☐ Prescription transcribed for wrong dosing schedule	☐ Other Comments:
☐ Prescription transcribed for wrong route	
☐ Other:	

Section 3 Medication Error Categorization (continued)

Dispensing(check all that apply)	**Was error intercepted before reaching the patient?**
☐ Medication dispensed to wrong patient ☐ Wrong medication dispensed ☐ Wrong dose dispensed ☐ Medication dispensed at wrong time (late) ☐ Wrong route dispensed ☐ Other:	☐ Yes, during dispensing ☐ Yes, during administration ☐ No ☐ Other Comments:
Administration(check all that apply)	**Was error intercepted before reaching the patient?**
☐ Medication administered to wrong patient ☐ Wrong medication administered to patient ☐ Wrong dose administered ☐ Medication administered at wrong time ☐ Medication administered via wrong route ☐ Other:	☐ No ☐ Other Comments:

Monitoring(check all that apply)

☐ Necessary monitoring not requested
☐ Necessary monitoring not performed
☐ Monitoring result not noted or acted upon
☐ Other:

Patient knowledge Deficiency

☐ Allergy information not available/noted
☐ Concomitant medication(s) not available/noted
☐ Concomitant condition(s) not available/noted
☐ Lab values/clinical information not available/noted

Medication knowledge Deficiency

☐ Indications for medication use
☐ Available dosage forms
☐ Appropriate dosing/dosing guidelines
☐ Appropriate routes for administration
☐ Drug compatibility
☐ Generic substitution

Non-adherence to Policies and Procedures

- ☐ Use of abbreviations in medication ordering
- ☐ Incomplete medication prescription processed
- ☐ Established treatment protocol deviation
- ☐ Established pharmacy policy deviation
- ☐ Established nursing policy deviation
- ☐ Drug delivery problem (dispensing delay)
- ☐ Non-standard dosing schedule used
- ☐ Medication "borrowed" from another patient
- ☐ Patient identification not checked
- ☐ Drug preparation error
- ☐ Other:

Miscellaneous

- ☐ Illegible physician handwriting
- ☐ Memory lapse
- ☐ Drug not available (stock problem)
- ☐ Equipment failure (e.g.,IV pump failure)
- ☐ Attending to other activity in unit (e.g. theatre case, admission, discharge)
- ☐ Other:

Medication Error Reporting Document

Hospital staff should report all medication errors, regardless of whether the error results in an adverse drug event (ADE). This will allow the hospital to assess opportunities to improve the medication administration processes to reduce the risk of such errors.

The results are intended to be entered into a database or tabulated to provide a quantitative report of the types and causes of medication errors.

Table 1. Types of Medication Involved in the Medication Errors

	Number of Errors	% of all Errors	Change in % from Previous
Antihistamine			
Antibiotic			
Antineoplastic or Immunosuppressive			
Autonomic			
Blood or Blood Products			
Blood Formation Coagulants			
Cardiovascular			
Central Nervous System			
Diagnostic or Radioactive Agent			
Electrolytic, Caloric, Water Balance			
Eyes, Ears, Nose, Throat Preps			
Gastrointestinal			
Hormone			
Pain medication			
Other			

Table 2. Categorization of Medication Errors

	Number % of Errors	Change in % from Previous	% Intercepted	Number % Causing ADE	Change in % from Previous
Prescribing/Prescription Errors	# (%)	+/-%	%	#(%)	+/-%
Wrong Patient					
Wrong drug - indication					
Wrong drug - allergy					
Wrong drug – drug interaction					
Wrong dose/dose not adjusted					
Wrong dosing schedule					
Wrong route					
Other					
Transcription/Verification Error					
Wrong Patient					
Wrong drug					
Wrong dose					
Wrong dosing schedule					
Wrong route					
Other					
Dispensing Forms					
Wrong Patient					
Wrong drug					
Wrong dose					
Wrong time (dispensed late)					
Wrong route					
Other					
Administration Errors					
Wrong Patient					
Wrong drug					
Wrong dose					
Wrong time					
Wrong route					
Other					
Monitoring Errors					
Monitoring not requested					
Monitoring not performed					
Monitoring result not acted upon					
Other					
Total	**# (100%)**	**+/- %**	**%**	**# (100%)**	**+/- %**

Table 3A. Possible Causes of medication Errors – by Medication Use Process

	Number % of Errors	Change in % from Previous	% Intercepted	Number % Causing ADE	Change in % from Previous
Prescribing/Prescription Errors	# (%)	+/-%	%	#(%)	+/-%
Patient knowledge Deficiency					
Medication knowledge Deficiency					
Non-adherence to P&P					
Miscellaneous					
Other					
Transcription/Verification Error					
Patient knowledge Deficiency					
Medication knowledge Deficiency					
Non-adherence to P&P					
Miscellaneous					
Other					
Dispensing Errors					
Patient knowledge Deficiency					
Medication knowledge Deficiency					
Non-adherence to P&P					
Miscellaneous					
Other					
Administration Errors					
Patient knowledge Deficiency					
Medication knowledge Deficiency					
Non-adherence to P&P					
Miscellaneous					
Other					
Monitoring Errors					
Patient knowledge Deficiency					
Medication knowledge Deficiency					
Non-adherence to P&P					
Miscellaneous					
Other					
Total	# (100%)	+/- %	%	# (100%)	+/- %

Table 3B. Possible Causes of Medication Errors – By Cause of Error

	Number % of Errors	Change in % from Previous	% Intercepted	Number % Causing ADE	Change in % from Previous
Patient knowledge Deficiency	**# (%)**	**+/-%**	**%**	**#(%)**	**+/-%**
Prescribing					
Transcribing/Verification					
Dispensing					
Administration					
Monitoring					
Medication knowledge Deficiency					
Prescribing					
Transcribing/Verification					
Dispensing					
Administration					
Monitoring					
Non-adherence to P&P					
Prescribing					
Transcribing/Verification					
Dispensing					
Administration					
Monitoring					
Miscellaneous					
Prescribing					
Transcribing/Verification					
Dispensing					
Administration					
Monitoring					
Total	**# (100%)**	**+/- %**	**%**	**# (100%)**	**+/- %**

Summary

Top Three Drug Classes Involved in Medication Errors:
Top Three Types of Medication Errors and Patterns of Recurrence: (i.e., is current trend better or worse than previous assessments?)
Top Three Causes Medication Errors (by Medication Use Process Step) and Patterns of Recurrence: (i.e., is current trend better or worse than previous assessments?)
Top Three Causes Medication Errors and Patterns of Recurrence: (i.e., is current trend better or worse than previous assessments?)
Recommendations for Quality Improvement (describe non-technical or technical solutions for major identified medication error problem areas)