

THE UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICINE

DEPARTMENT OF NURSING SCIENCES

**KNOWLEDGE AND UTILISATION OF INFECTION PREVENTION
GUIDELINES BY OPERATING THEATRE AND INTENSIVE CARE
NURSES AT UNIVERSITY TEACHING HOSPITAL, LUSAKA**

BY

JUSTINA BWALYA CHEMBE

ZRN (KITWE, 1979)

ZOTN (LUSAKA, 1982)

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LIST OF ABBREVIATIONS

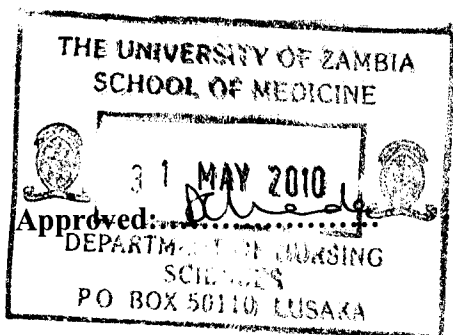
AIDS	- Acquired Immune Deficiency Syndrome
CBoH	- Central Board of Health
CDC	- Centre for Disease Control
HAI	- Hospital Acquired Infection
HICC	- Hospital Infection Control Committee
HIPP	- Hospital Infection Prevention Policy
HIV	- Human Immune-Deficiency Virus
ICU	- Intensive Care Unit
IP	- Infection Prevention
IPGs	- Infection Prevention Guidelines
JHPIEGO	- John Hopkins Information and Education on Gynaecology and Obstetrics
NIPWG	-National Infection Prevention Working Group
MoH	- Ministry of Health
OTD	- Operating Theatre Department
PPE	- Personal Protective Equipment
PEP	- Post Exposure Prophylaxis
UTH	- University Teaching Hospital
SOIP	- Safety Occupational and Infection Prevention Committee

DECLARATION

I, **JUSTINA BWALYA CHEMBE**, do hereby solemnly declare that the work presented in this study for a Bachelor of Science in Nursing Degree has not been presented either wholly or in part, for any other degree and is not being currently submitted for any other degree.

Signed: JB Chembe

Date: 31/05/2010



Date: 31/05/2010

STATEMENT

I, **JUSTINA BWALYA CHEMBE**, do hereby certify that this study is my original piece of work and is entirely the result of my own independent investigation while studying at the University of Zambia, School of Medicine, Department of Nursing Sciences. The various sources to which I am indebted are clearly indicated in the text and references.

Signed.....

Date.....31/05/2010

DEDICATION

To

My late father Pascal Mulenga Chembe and to my old mother Theresa Mutale Chapandukila whose encouragement and love has continued to inspire me from a tender age up until now.

To

My husband Mathias Andy Zulu and my children for the love, encouragement and support that have made it possible for me to accomplish my ambitions.

ABSTRACT

Despite the initiatives taken to combat infection at University Teaching Hospital, Hospital Acquired Infections especially Post Operative Wound Infection rates are still on the increase and a lot of pathogens continue to be isolated from hospital medical and nursing care equipment.

The main objective of this study was to determine the extent operating theatre and intensive care unit nurses have embraced the knowledge and utilization of Infection Prevention Guidelines.

The study revealed that hospital acquired infections are the major causes of morbidity and mortality in patients admitted in our health institutions. These prolong patients' stay in hospital thus causing the hospital to incur extra costs. Reference was also made to studies carried out nationally, regionally and globally on the aspect of infection prevention guidelines.

Literature review had also shown that similar studies on the same aspect had been done in Zambia before on various cadres of health care givers such as doctors, midwives, student nurses, general nurses and daily classified employees but no study had been conducted on operating theatre and intensive care nurses thereby creating a gap in knowledge of the level of the infection prevention practices in these critical areas.

To this end an exhausted literature review was conducted on the application of knowledge and utilization of the guidelines by nurses in the Operating Theatres and Intensive Care Units at the University Teaching Hospital.

A non-experimental descriptive study design was used to determine the level of knowledge and utilization of Infection Prevention Guidelines by operating theatre and intensive care unit nurses at the University Teaching Hospital. Primary data was collected using self administered questionnaires. The main source of data was from text books, journals and the internet. Analysis of data was done manually on a data master sheet and a calculator was used to derive at calculations. Data was presented in the form of frequency tables, pie and bar charts. Cross tabulation tables were used to determine the relationship between variables.

The findings of the study revealed that though the majority of the respondents had heard about Infection Prevention Guidelines (IPGs), very few were actually applying the knowledge resulting in high infections rates.

On the basis of the findings, it can be concluded that the increase in nosocomial infections at the University Teaching Hospital was lack of applying knowledge of the guidelines by nurses in their day to day operations.

CHAPTER 1

1.0 INTRODUCTION

1.1 Background information

Infection is the entry and development of micro-organisms in living species. These micro-organisms are invisible to the naked eye. This may result in the failure of health care workers to recognize that their hands can be responsible for cross infection (Horton, 1995). These micro-organisms are found both within and upon skin and are classified by Price (1938), as either “resident” or “transient”.

Resident micro-organisms are commonly termed normal flora or commensals. They live deeply seated within the epidermis- in skin crevices, hair follicles, sweat glands and beneath finger nails (Price, 1938),

Transient micro-organisms are located on the surface of the skin and beneath the superficial cells of the stratum corneum. They are termed “transient” because direct contact with other people, equipment or other body sites all result in the transfer of these microorganisms to and from the hands.

Hospital Acquired Infection (HAI) is an infection which develops as a result of hospital treatment and was not present or incubating on admission to hospital (Meers et al.1981). Chanda (2004) defines HAI as any infection which develops in an in-patient, especially where the incubation period is unknown, or where the infection is due to malpractice by health-care providers by not observing Infection Prevention Guidelines.

HAI are caused by highly virulent organisms such as *Streptococcus pyogenes*, *Staphylococcus aureus*, *Candida albicans*, *Escherichia coli*, *Hepatitis viruses*, and *Pseudomonas aeruginosa*.

These pathogens can be transmitted from the source patient to another patient or from the health care provider to a patient or vice versa when they do not observe infection prevention guidelines like hand washing.

The National Prevalence Studies in Britain in 1980 and 1994\95 showed that 1 in 9 patients acquire a hospital infection (Meers et al.1981; Emmerson et al.1996). Hospital Acquired Infection is costly in both financial and human terms. Nosocomial infection rates range from 1% in Europe and America to more than 40% in some parts of Asia, Latin America and Sub-Sahara Africa (Lynch 1997). The most frequent nosocomial infections occurring in developing countries are Surgical Site Infections (SSI), urinary tract infections and lower respiratory tract infections such as pneumonia (Emori and Gaynes,1993).

Hospital Acquired Infections (HAI) are still a major problem in Zambia as demonstrated by the increase in post operation wound infections among patients with Caesarian Section which is 30% (Katowa, 2007). This could be attributed to ineffective use of Infection Prevention (IP) and control practices and guidelines (Central Board of Health, 2003), hence the need to highlight on some key areas like: Hospital stay, IP practices, resistance levels, Universal precautions, Training and procurement.

Hospital Acquired Infections (HAIs) put an added financial strain on the health system. This is due to prolonged patient hospitalization, use of expensive drugs and provision of other services such as laboratory and x-ray services. According to guidelines developed by the Central Board of Health (2003) and quoted by Chanda 2004) noted that HAI cause patients to stay unnecessarily longer days in hospitals and yet this can be avoided simply by adhering to the stipulated and cheaper infection and control methods and practices. Tietjen et al (2003), stated that an average, surgical site infection increases a patient's hospital stay by 7-10 days, with organ\space and deep incision SSI accounting for the longest stays and highest cost.

IP and control methods and practices are:

- Adhering to recommended IP practices, especially hand hygiene and wearing gloves;
- Paying attention to well established processes for decontamination and cleaning of soiled instruments and other items, followed by either sterilization or high level disinfection
- Improving safety in operating rooms and other risk areas where the most serious and frequent injuries and exposures to infections agents occur.

Resistance: Some microorganisms could develop resistance to some commonly used antibiotics such as Penicillins such as Methicilin and it is difficult to eradicate them from the health care environment (Beegogne-Berezin,1995). Viruses too such as Norwalk virus are an increasing problem in both hospitals and community, and can be disruptive to the workload and very debilitating to the ill or fragile (Little, 1995; Jefferies, 1995).

Cost: Hospital Acquired Infection is costly in both financial and human terms. As far back as 1989 it was estimated that HAI cost the National Health Service in England 111 million pounds per year (Currie and Maynard 1989).

The cost of HAIs is seldom calculated in Africa, because there are inadequate reporting systems on the knowledge and utilization of IPG. Chanda (2004) reported that observing the guidelines on cleaning of the clinical area using appropriate cleansing material saved the health care institution a staggering K70 million. This observation of the guidelines also contributed to the prevention of Hospital Acquired Infections. Reports from other developing countries have put the HAI rate as high as 15% of the admissions. In South Africa, in 1993, it was estimated that each case of hospital acquired infection required an average of 7 days additional hospitalization. The cost of this alone was estimated nationally to be US \$37 million. This was at a conservative HAI rate of 5%. If the HAI rate was put at 15% the cost would exceed US\$ 110. This money could have been used on Primary Health Care.

People receiving health and medical care whether in hospital or clinic or home setting, are at risk of becoming infected with nosocomial infections unless precautions are taken to prevent these infection (Alvarado 2000). To address this problem, the Centre for Disease Control (CDC) of the United States Public Health Services developed the Universal Precautions (UP) guidelines in 1985. The guidelines state that , 'All patients be assumed to be infectious of HIV, hepatitis B and other blood borne pathogens' (Chin 1990). This was in response to the emergence of blood borne diseases such as the Immunodeficiency Syndrome (AIDS) and hepatitis B and C viruses.

Universal Precautions should be followed when health workers come into contact with blood and other body fluids such as vaginal secretions, semen, amniotic, pleural, pericardial, synovial cerebral spinal fluid or any body fluids visibly contaminated with blood (Chin 1990). Universal Precautions were modified by CDC in 1996 into a two level approach known as Standard Precautions and Transmission- Based Precautions.

Standard Precautions

Chanda, (2004) quoting Zambia Infection Prevention Guidelines (2003) defines the Standard Precautions as internationally approved measures which prevent health care providers from either infecting their patients or acquiring hospital infections whilst rendering care. They include; (a) washing hands with soap and water or using an antiseptic hand rub before and after attending to a patient, (b) covering all cuts and bruises which offer portals of entry for the HIV virus, (c) not recapping needles and syringes, (d) wearing of barriers such as gloves, gowns, masks and protective eye shields to prevent exposure to body fluids containing visible blood, (e) bending or manipulating used needles and other sharp instruments, (f) decontaminating of all reusable instruments, linen which includes drapes and gowns in 0.5% chlorine solution for 10 minutes then washing with soap and clean water till visibly clean and finally sterilizing. Sterilization can be achieved by: high pressure steam (autoclave at 106 kPa 20 minutes for unwrapped items or 30 minutes for wrapped items); dry heat (oven at 170 degrees for 1 hour); or by the use of chemical sterilants (glutaraldehyde 2% for 10 hours or 8% formaldehyde

solution for 24 hours). Any spills of blood or body fluids should be immediately cleaned up using hypochlorite solution 0.5%. To get 0.5% mix 6 parts of water to 1 part of hypochlorite solution. Decontamination inactivates Hepatitis B virus and HIV virus within 10 minutes of soaking in the appropriate strength of diluted hypochlorite solution.

Transmission-Based Precautions apply to hospitalized patients known or highly suspected to be infected or colonized with pathogens transmitted through air borne droplet or by contact. These can be classified as;

Airborne Precautions: where the patient is put in a private room, doors are kept closed at all times and all visitors are checked for susceptibility before allowing visiting,

Droplet Precautions: where private room door may be left open, wear mask and goggles or face shield if within 1 meter (3 feet 3 inches) of patient to protect staff from eye splashes and limit transport of patient to essential purposes only.

Contact Precautions which includes: hand washing with antibacterial agent, or use a waterless, alcohol-based antiseptic hand rub after removing gloves, wearing clean non sterile examination gloves when entering room and changing gloves after contact with infectious material (e.g., faeces or wound drainage), wearing clean non sterile gown when entering the patient's room if patient contact is anticipated or the patient is incontinent, has diarrhea, or where a patient has an operation such as an ileostomy, colostomy or any wound that is not contained in a dressing and is clean. They also include disinfection of any equipment shared among infected and non infected patients after each use.

The Government of Zambia through the Ministry of Health and its co-operating partners developed the Zambia Infection Prevention Guidelines in 2003. This was after a realization that infection prevention was a critical component of quality health care. The Infection Prevention Guidelines specifies the infection prevention principles which are:

- Consider every person (client or staff) infectious.
- Wash hands-the most practical procedure for preventing cross contamination (person to person).
- Wear gloves before touching any thing wet-broken skin, mucous membranes, blood, body fluids, secretions or excretions-or soiled instruments and other items.

- Use barriers including Personal Protective Equipment (PPE) such as protective goggles, face masks and aprons if splashes or spills of blood or body fluids secretions or excretions are anticipated.
- Use safe work practices, such as not recapping or bending needles, safely passing sharp instruments, and disposing sharps in a puncture proof container.
- Process instruments and other items that come into contact with blood, body fluids, secretions or excretions.
- Dispose contaminated instruments and contaminated waste thoroughly and properly.
- Isolate patients only if secretions or excretions cannot be contained (Ministry of Health/CBOH, 2003).

The infection prevention guidelines are essential in guiding the health care workers, the client and the community in preventing hospital acquired infections. One of the co-operating partners that has been spearheading the development and implementation of the infection prevention guidelines is John Hopkins Information Education on Gynaecology and Obstetric (JHPIEGO). JHPIEGO in conjunction with the Zambian Government facilitated the development of the infection prevention (IP) Guidelines and the National Infection Prevention and Control Strategic Plan 2005-2007. National strategic plan for infection Prevention is meant to facilitate the implementation of the Guidelines.

Training: JHPIEGO has also trained health care workers at hospital and District level on the use of the Infection Prevention Guidelines in most parts of Zambia. The University Teaching Hospital (UTH) is one of the hospitals which has benefited from JHPIEGO in terms of training of health workers. Despite the hospital staff, which includes some theatre staff, being trained in IP practices, the hospital is still recording high rates of post operative wound infections.

Procurement: In addition JHPIEGO has procured essential IP materials and supplies such as buckets for decontamination, colour coded bin liners, boots, utility gloves,

disposable plastic bags of different colours according to the nature of waste to be disposed, sharp boxes and sodium hypochlorite for hospitals and districts. UTH has also benefited as a recipient of these essential IP materials and supplies.

The OTD and ICU are among some of the departments that have benefited from JHPIEGO in terms of such supplies. These two units are involved in critical care procedures in patients. Critical care procedures are sterile procedures, which require aseptic technique. They involve invasion of the patient's sterile tissues e.g. surgical operations and injections and, therefore, require the use of critical care items (Chanda 2004). The following Table indicates the critical care procedures performed in the operating theatres at University Teaching Hospital (UTH) in years 2007 and 2008 respectively.

Table 1: CRITICAL OPERATIONS CARRIED OUT IN 2007 AND 2008 AT UTH.

TYPE	2007	2008	% Increase and Decrease
MINOR	9,575	9,867	3.05%
INTERMEDIATE	1,220	547	55.16%
MAJOR	5,864	7,062	20.43%
TOTAL	16,659	17,476	4.90%

Source: UTH Health Information System (July, 2009)

Table 1 above shows an increase of 55.16% in the number of minor cases done between 2007 and 2008. Where as the major cases show a 20.43% increase in the same period. However there was a reduction in the number of intermediate cases done with a percentage of 55.16%. OT nurses, therefore, need to observe and adhere to IPGs in order to reduce HAIs at the institution.

1.2 STATEMENT OF THE PROBLEM

Globally, inadequate knowledge and utilization of Infection prevention guidelines have led to patients acquiring hospital infections. According to Munganga (2007), 1 to10 patients acquire nosocomial infections (coughlan 1996). This has become a public health concern.

Munganga (2007), quoting Ofili and Sogbeson (2003) in West Africa, recommended that IP should be strictly adhered to as outlined in the nursing curriculum because they found out that nurses had inadequate knowledge of IP practices which led to poor utilization of IP guidelines.

In Zambia, it was observed that medical doctors were not adhering to and using IP guidelines .

Inadequate knowledge and utilization of IP guidelines have led to increased number of wound infections as shown in Table 2 below captured in the fourth quarter 2007.

TABLE 2: POST OPERATION WOUND INFECTION DATA CAPTURED IN SURGICAL WARDS AT UTH (4TH QUARTER 2007)

WARD	NUMBER OF OPERATIONS	NUMBER OF INFECTED WOUNDS	NUMBER OF NONE INFECTED WOUNDS OR CLEAN WOUNDS	INFECTION PERCENTAGE
A-BLOCK	0	0	0	0
B-BLOCK	1,707	0	1,707	0%
C-BLOCK	329	09	320	2.7%
D-BLOCK	25	0	25	0%
E BLOCK	31	03	28	9.7%
G-BLOCK	366	13	351	3.6%
PHASE V	530	0	530	0%

TOTAL	2,988	25	2961	14.6%
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Source: UTH INFECTION PREVENTION SURVEILANCE TEAM 2009.

Institutionally, it can be seen that post operative wound infections have continued to increase. At UTH for instance available data in Table 2 show that there is a 9.7% and 3.6 % incidences in post operative wound infections in the last quarter of 2007 in E block and G Block respectively. Chanda, (2007) among burns patients in G Block in UTH noted that (36) 21% out of 170 patients died due nosocomial infections.

The causes of HAI could be due to health workers not adhering to Infection Prevention Guidelines such as: hand washing, sterilization of instruments and proper handling of used linen, using non-sterile materials for wound dressing, erratic supply of IP materials such as sodium hypochlorite (jik) for decontamination and non availability of protective materials such as masks, gloves, aprons and eye shields.

The OTD and ICU, just like any other department within UTH have not been spared with critical shortage of staff such that the staffs are faced with heavy work load which might lead to them not observing IP practices which will consequently result in an increase in the number of post operative wound infections.

Pathogens that are potential causative agents of post-operative nosocomial wound infections were isolated in 2006, 2007and 2008 conservatively as shown in Table 3 below. The three reports taken at different times of the year on different theatre equipment have consistently yielded microorganisms such as *Citrobacter diversus*, *Enterobacter agglomerans*, *Staphylococcus aureus* and *Klebsiella oxytica*. A study done by Chanda (2007) showed that 10 (6%) of the 170 patients under study were infected with *Pseudomonas aeruginosa* while 28 (16%) were infected with *Staphylococcus aureus*.This is a clear indication that the operating room environment and equipment is most of the time colonized by these microorganisms and as such poses a danger to both the patients as well as the staff acquiring HAIs.

TABLE 3 HOSPITAL PATHOGENS IN OTD UTH

HOSPITAL PATHOGENES	PLACES WHERE ISOLATED
Citrobacter diversus	<ul style="list-style-type: none">• Hair ring• Operating lamp• Operating table mattress
Bacillus species	<ul style="list-style-type: none">• Anesthetic circuit• Operating table
Coagulase negative staphylococcus	<ul style="list-style-type: none">• Suction machine
Staphylococcus aureus	<ul style="list-style-type: none">• Operating table
Enterobacter agglomerans	<ul style="list-style-type: none">• Linen on operating table• Sterile set
Klebsiella	<ul style="list-style-type: none">• Roof crevices• Operating lamp

SOURCE: IPSC STATISTICS 2006, 2007 AND 2008 MEDICAL LABORATORY DEPARTMENT UTH.

Sources of these pathogens are the patient’s skin, mucous membranes or bowels. The pathogens could also come from the hands and nose of the surgical team members. Contaminated operating rooms as a result of poor ventilation due to non-functional air conditioners in the theatre department as well as contaminated equipment and instruments can also be a source of these pathogens (Tietjen et al, 2003). This is also confirmed by the organisms isolated from UTH theatres in the years 2006, 2007, and 2008 conservatively.

The acquisition of HAI from patients to patients as Annot (1991) quoting Florence Nightingale stipulated that, the hospitals shall do the sick no harm. But hospitals are

continuing to do harm to patients since it is seen that currently these units within the hospital are seen to be doing harm to patients through probably by not observing IPGs.

Both MOH and UTH incur extra costs in an effort to prevent the occurrence of hospital acquired infections especially in this era of global economic recession.

Hospital acquired infections affect the patients in several ways, it prolongs their stay in hospitals, affects the income of the family as they will incur opportunity costs for extra days that their loved ones may spend in the hospital due to hospital acquired infections.

UTH management has been concerned with the nosocomial infections hence it set up a Hospital Infection Control Committee (HICC). In 1986, the UTH Board of Management set up the HICC to monitor and prevent HAI. The HICC trained IP Liaison nurses and set up an IP secretariat. This committee was later renamed 'Safety Occupational and Infection Prevention Committee (SOIP)'. The main objective of the committee is to monitor the incidence and prevalence of hospital acquired infections and to prevent these spreading from the staff to the patients and from the patients to the staff or visitors. It is also involved in monitoring the application and utilization of Infection Prevention Guidelines in different departments of the hospital.

One of the department under surveillance is the OT and ICU Department. The SOIP and Laboratory Department monitor the implementation of infection prevention practices by going round to do the "on spot checks" on disposal of sharps, segregation of medical waste and disposal, decontamination process of syringes, gloves and instruments.

Further, UTH has displayed the stated infection prevention guidelines clearly on notice boards in all clinical areas. The Department of Microbiology and SOIP monitor the micro-organisms in the OTD and ICU periodically by swabbing equipment, floors and walls in order to identify the sources of organisms.

In 2004, Odimba, a Professor in the Surgical Unit conducted a five (5) day work shop for all theatre staff on 'Prevention of Nosocomial HIV and all Operating Rooms serious

Infections'. This workshop was aimed at empowering theatre staff on infection prevention skills. It comprised of surgeons, theatre nurses and all support staff. This workshop also stressed that; the implementation of infection prevention measures can be cost effective in the health care delivery.

Nationally, the MOH has worked with JHPIEGO in establishing a National Infection Prevention Working Group (NIPWG) who is mandated to prevent hospital infections in all health care institutions. The NIPWG has also set up and published an Infection Prevention Guidelines hand book for use by all health care workers in the country.

In spite of good interventions and attempts by the Government through the Ministry of Health to reduce infections caused by exposure to the care providers as well as the patients by developing and implementing the Infection Prevention Guidelines, the prevalence of infections among patients and nurses is still high. This is proof enough by going with the table 2 above which captured only a quarter of post-operative wound infections from surgical wards at UTH in the year 2007 according to the available records.

In spite of all the efforts employed in developing the guidelines the workforce is not knowledgeable and do not use these guidelines hence this study needs to be done.

This is because, in spite of setting of Infection Prevention Guidelines and programmes in the health institutions, the rate of hospital acquired infections among in- patients as well as health care providers' keeps on increasing.

FACTORS ASSOCIATED WITH KNOWLEDGE AND UTILIZATION OF INFECTION PREVENTION GUIDELINES.

1.3.1 SERVICE RELATED FACTORS

1.3.1.1 Hospital Policy and Infection Prevention Guidelines

The Hospital Infection Prevention Policy (HIPP) is a health professional policy which guides the hospital community on IP measures. It protects the health and safety of all its personnel in a safe and conducive health- care environment. Each department should derive their guidelines from the policies formulated by the Hospital Management and SOIP. They are concerned with what should be done but not how to do it. Infection Prevention policy covers areas like;

- Minimizing the spread of nosocomial infections,
- Implementing good practices in all clinical areas,
- Auditing IP practices,
- Continuing education and training,
- Conducting research for updating practice.
- Where as guidelines guide practice and are concerned with how things are done and therefore, they are about implementation of agreed policies, they cover areas like
- Maintenance of safety and occupational environment,
- Maintenance of isolation processes
- Refuse disposal
- Sharps disposal.

An institutional policy in place may have or may not have an impact on infection prevention practices by the care providers. If the institution has a policy in place, it will be guided in the formulation of the Infection Prevention Guidelines which will affect infection prevention practices by the care givers. On the other hand having an institutional policy does not guarantee its utilization depending on the importance management as well as the users attach to this policy guidelines.

1.3.1.2 Work Overload

With the current trend of theatre nurses migrating to other countries and private hospitals for better conditions of service, the nurses are overwhelmed with a lot of work. One theatre nurse scrubs for at least five (5) operations continuously without a break in between. This can either positively or negatively influence the utilization of IPGs. Negative in the sense that the nurses may manipulate or skip to do certain procedures in

order to avoid being harassed by the surgeons or in view of finishing the list on time. Hence a lot of short cuts may be practised leading to compromised quality of care. On the other hand this can be a positive influence as it can lead to improved skills of the nurse as she or he continuously practises IPGs. This will promote provision of safety and security to herself as well as to the clients in her or his care.

1.3.1.3 Medical-surgical supplies

Medical-surgical supplies such as gloves, disinfectants, sterilizing equipment, protective clothing and lack of proper sharp boxes are essential materials and components and can influence how the theatre nurses utilize the IPGs. In instances where such materials are not available, such circumstances will constitute poor utilization of IPG's by OT and ICU Nurses despite the knowledge they possess. However, sometimes supplies may be available but because of unfavorable working conditions such as work overload, staff shortage and stress, a nurse might not be in a position to use these supplies despite their availability.

1.3.1.4 Staff Attitude

Attitudes are a pattern of mental views established by cumulative prior experience and may make an individual to develop negative or positive attitude towards IPGs (Chanda 2004). The negative attitude can be attributed to a lot of factors such as work overload, long lists, shortage of staff, inadequate items to use, and so on. Where as a positive attitude encourage theatre nurses in the utilization of IPG's and hence helps in the prevention of HAI's amongst nurses themselves as well as their clients.

1.3.1.5 Staff Shortage

Theatre work entails working as a team that is she or he must be surrounded by other staff that should be able to carry out her orders efficiently in an event that she\he is scrubbed up. With the current staff shortage, untrained personnel like the porters and maids being used as circulating personnel may pose a danger to IP practices as they may fail to execute such practices correctly. On the other hand, a competent and responsible

nurse will make sure that in the face of staff shortage, proper actions concerning IP practices are executed through adequate supervision.

1.3.1.6 Nature and Urgency of the Operation

Emergency cases such as caesarian sections for obstructed labour or foetal distress where priority of the health care is to save the life of the mother as well as the baby might negatively influence IP practices by the nurses in such circumstances as compared to their colleagues in areas where they do not deal with emergencies. Nature of the operation can also impact positively or negatively on IP practices. For example, a nurse assisting with a dirty case (a case with pus) needs to take measures to prevent intra operative contamination of other organs as compared to nurse assisting with a simple and uncomplicated case like herniorraphy.

1.3.1.7 Training in IPGs

Training in IPGs can contribute positively to utilization of IPGs. There are new nurses qualifying every year and if these nurses are not empowered with continued training in IP practices in order to improve their skills, then this lack of knowledge will hinder them from utilizing the IPGs adequately. However, if nurses are adequately trained in IPG's this will influence utilization.

1.3.2 SOCIO-CULTURAL AND ECONOMIC FACTORS

1.3.2.1 Length of working experience

Experience among theatre nurses may influence infection prevention practices. This can be both ways that is positively or negatively, the lesser the number of years of experience, the more irresponsible or the more the number of years of experience, the more careless they become and the more they develop a negative attitude.

1.3.2.2 Age of the theatre nurse

The young nurses may tend to portray nonchalant attitude towards serious issues and may find it not necessary to adhere to IPGs, Munganga (2007). While the senior nurses with experience and know the implications of non adherence to IP practices will endeavor to practice and utilize IPG's at all times.

1.3.2.3 Gender of the theatre nurse

It has been observed that most male theatre nurses would rather opt to be assistants to the surgeon in the process of carrying out an operation rather than perform their nursing duties probably because of staff shortages even among the Doctors or simply to satisfy their male ego and dominance over the female nurses. This trend will lead to them neglecting their duty of carrying out the infection prevention practices. However, male nurses being active and energetic may pick up where the women folk have left off and make certain that IP practices are adhered to at all times since they want to be in supervisory positions.

1.3.2.4 Educational Level

The Registered Theatre Nurses are the most highly ranked in the Department and as such they take up a lot of responsibilities. This compounded with the critical shortage of staff can force them to delegate some of the important duties such as decontamination of instruments and soiled linen to other cadres so that they can attend to other duties. These support staff may not be conversant with IPGs leading to incorrect practices as regards to IPGs. On the other hand if the registered theatre nurse exposes all the theatre staff on the importance of the IPGs through continued education and practice, this knowledge will lead to improved utilization of IPGs in the department by the juniors.

1.3.3 DISEASE RELATED FACTORS

Some infectious diseases like HIV, Hepatitis B and C as well as Gangrene are diseases clearly outlined in the Zambia Infection Prevention Guidelines (2003) and are easily transmitted from one patient to the other and vice versa. Health providers are also infected through inadequate knowledge of IP practices through use of used gloves and

razor blades from patients infected with the above mentioned diseases. This therefore requires the health care provider to be knowledgeable on the transmission of these blood borne diseases which in turn will influence and improve utilization of IPGs.

1.3.3.1 HIV, HBV, HCV

HIV, HBV, HCV infections to patients and Health workers are through contamination with blood and body fluids during invasive procedures such as surgery. In the presence of these poor IP practices, this infection may be passed on to other clients innocently especially when there are few protective clothing and poorly sterilized instruments for use. Therefore, it is important that the Nurses observe stringently the IP Guidelines to prevent transmission of infection to their clients or them being infected from the clients.

1.3.3.2 GANGRENE

Gangrene is death of body tissue, generally in considerable mass due either to loss of blood supply or to infections such as clostridium. It occurs mostly in the extremities especially in arteriosclerosis and diabetic conditions. It spreads with great speed and as such requires that health workers strictly observe IP practices to prevent spread to other clients as well as to themselves. A case of gangrene in OTD entails closure of a theatre unit after thorough cleaning to safe guard lives of other patients and staff. In this regard adequate knowledge and utilization of infection prevention guidelines is very important to manage cases of gangrene.

FIGURE 1. DIAGRAM OF PROBLEM ANALYSIS

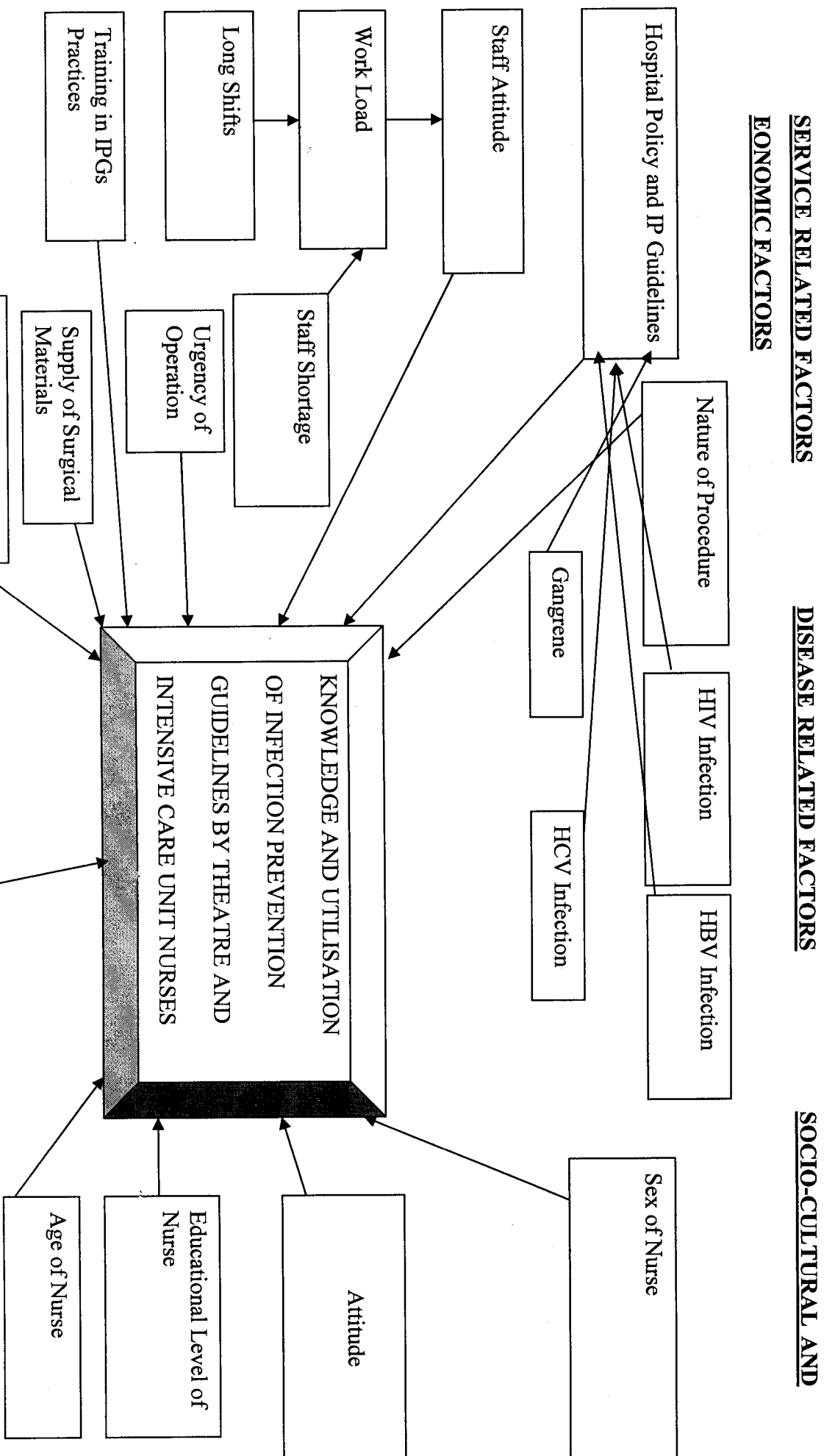
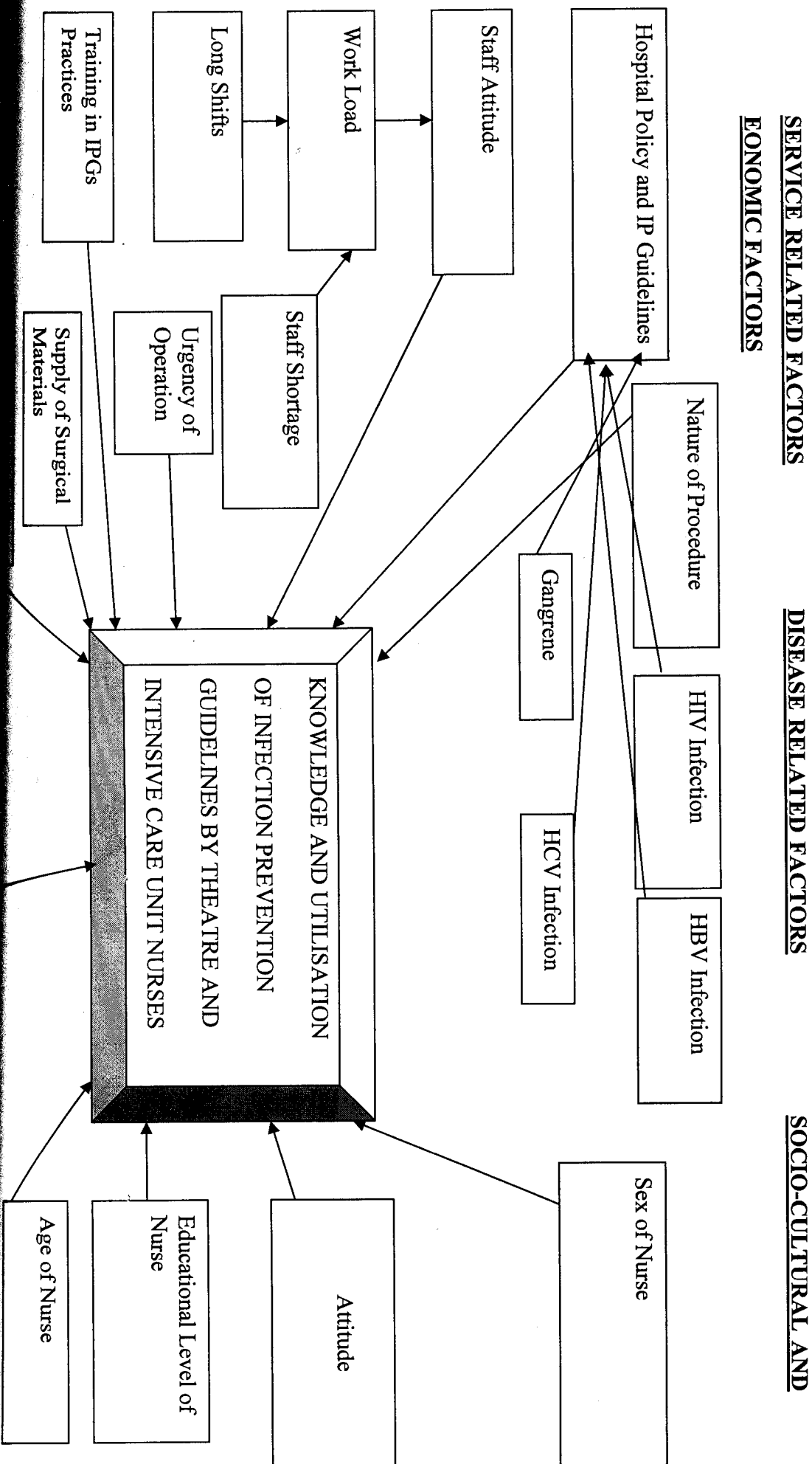


FIGURE 1. DIAGRAM OF PROBLEM ANALYSIS



1.5 JUSTIFICATION

Based on my experience as a clinical Instructor in the Operating Theatre Department and Intensive Care Unit of the UTH, I noted that the nurses were not using the infection prevention guidelines in their practice. There was increased post operative wound infections in the surgical wards.. this prompted me to conduct this study in order to determine the knowledge and the utilization of infection prevention guidelines by operating Theatre and Intensive Care Unit nurses at the University Teaching Hospital, Lusaka Zambia.

The pathogens isolated on various equipment and areas of the theatre department at UTH prove the fact that Medical and nursing care equipment in the theatre environment are contaminated. Each contaminated Medical and Nursing care equipment can be a potential source of Hospital Acquired Infections, hence the need for Theatre Nurses to take IP seriously since they use these items and equipment while rendering care to their patients. Several studies have been conducted on infection prevention, such as studies done by Chanda (1995), Libetwa (1997), Muchemwa (1996), Munganga (2007) and Katowa (2007). However, no study has been done to determine knowledge and utilization of Infection Prevention Guidelines by Theatre and ICU Nurses. It is hoped that the current study will fill in this gap.

Secondly, despite the number of Sensitization Workshops and Seminars on Infection Prevention, Hospital Acquired Infections are still on the increase. This shows that something else needs to be done to lower the infection rates and will justify that this study be carried out.

It is hoped that the results of the study will be used by UTH management together with the infection prevention committee to develop strategies which will enhance knowledge and utilization of Infection Prevention Guidelines by Theatre Nurses. Also it being an academic research exercise the findings will contribute to the existing body of knowledge and utilization of Infection Prevention Guidelines and to allow further research so as to

empower policy makers to make quality decisions that would help effective use of Infection Prevention Guidelines by Theatre and ICU nurses.

1.6 OBJECTIVES OF THE STUDY

An objective is a summary of what is to be achieved by the study. It is a clear, concise, declarative statement that is expressed in the present tense.

1.6.1 GENERAL OBJECTIVE

To determine knowledge and utilization of Infection Prevention Guidelines by Operating Theatre and Intensive Care Unit Nurses.

1.6.2 SPECIFIC OBJECTIVES

1. To determine OT and ICU Nurses knowledge of Infection Prevention Guidelines and Hospital Acquired Infections.
2. To determine utilization of Infection Prevention Guidelines by OT and ICU Nurses.
3. To determine the relationship between knowledge and utilization of IPG by theatre and Intensive Care Unit nurses.
4. To make recommendations.

1.7 HYPOTHESIS

Hypothesis is the statement that predicts the relationship between one or two variables.

As knowledge on Infection Prevention Guidelines among OT and ICU Nurses increases, utilization of Infection Prevention Guidelines increases.

1.8 DEFINITION OF KEY TERMS

1.8.1 CONCEPTUAL DEFINITIONS

1.8.1.1 Guidelines

Advice (usually from somebody in authority) on policy.

1.8.1.2 Knowledge

This is what someone knows about a particular subject.

1.8.1.3 Infection

Infection or being infected; communication of disease, especially by agents of atmosphere or water.

1.8.1.4 Nosocomial Infection

Communication of disease that happens while someone is in hospital.

1.8.1.5 Prevention

Act of preventing something from happening.

1.8.1.6 Utilization

To utilize is to use something.

1.8.1.7 Universal Precaution

This is care taken by all in advance to avoid a risk of communicating disease.

1.8.2 OPERATIONAL DEFINITIONS

1.8.2.1 Guidelines

These are general rules and principles pertaining to Infection Prevention.

1.8.2.2 Knowledge

These are the facts, information, skills and understanding that Theatre and ICU Nurses have on Infection Prevention Guidelines which include; hand hygiene, use of protective equipment, safe and proper waste management, decontamination and sterilization or high level disinfection (HLD)

1.8.2.3 Infection

This is the entry and development of micro-organisms in the body of human beings.

1.8.2.4 Nosocomial infections

These are infections that patients acquire whilst in hospital as a result of improper IP practices.

1.8.2.5 Prevention

These are measures put in place to stop the transmission of infection.

1.8.2.6 Utilization

These are practices carried out by Theatre and ICU nurses regularly such as proper hand washing in order to prevent spread of infection to patients as well as themselves.

1.8.2.7 Universal Precautions

These are a set of procedures and guidelines designed to take care of the health care provider and others under her/his care in order to prevent entry of micro-organisms in the body.

1.9 VARIABLES AND CUT-OFF POINTS

DEPENDENT VARIABLES

This is the outcome variable of interest, the variable that is hypothesized to depend on or to be caused by another variable (called the independent variable), sometimes referred to as a criterion variable (Polit and Hungler, 1995).

DEPENDENT VARIABLE

Utilization of Infection Prevention Guidelines by OT and ICU Nurses.

INDEPENDENT VARIABLE

This is the variable that is believed to cause or influence the dependent variable, in experimental research, the manipulated variable (Polit and Hungler, 1995)

The independent variable is:

Knowledge of Infection Prevention Guidelines and Hospital Acquired Infections by OT and ICU Nurses.

Table 4: VARIABLES AND THE CUT – OFF POINTS

VARIABLE	CUT-OFF POINT	INDICATORS	QUESTION NO.
Knowledge of Infection Prevention Guidelines/Hospital Acquired Infections	High	Correct response to knowledge questions with scores 31-45. When respondent is able to define infection prevention, state the universal precaution guidelines.	7-19
	Moderate	Correct response to knowledge questions with scores 16-30. When respondent is able to define infection prevention, state a few	7-19

		universal precautions guidelines	
	Low	<p>Correct responses to knowledge questions with scores 0-15</p> <p>When respondent is not able to define infection prevention, state universal precautions guidelines.</p>	7-19
Utilization of Infection Prevention Guidelines	High	<p>Correct responses to utilization questions with scores 15-20</p> <p>When respondent follows all laid down guidelines on infection prevention.</p>	20-29
	Moderate	<p>Correct responses to utilization questions with scores 8-14</p> <p>When respondent follows some of the laid down guidelines on infection prevention.</p>	20-29
	Low	<p>Correct responses to utilization questions with scores 0-7.</p> <p>When respondent does not follow any of the laid down guidelines on infection prevention.</p>	20-29

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 Introduction

Literature review focuses on the previous studies done on IP practices by other authors such as Munganga, Chanda, Libetwa, Kabange and Katowa to determine the IP practices of Health Care Providers and their perception on rendering quality care to the clients. The review however, revealed that despite the studies being done on IP practices by health workers a lot still needs to be done in order to reduce the increasing rates of HAIs among in-patients and staff. The review will help to establish what is already known about IP and also identify the gaps on knowledge and utilization of IP Guidelines by Theatre and ICU Nurses.

According to Chanda (2004), infection is the entry and development of micro-organisms in living species. Infection prevention and control are measures instituted in all health care facilities in order to prevent and control the transmission of micro-organisms in the Health care institution. These are also measures that have been put in place in order to protect the health care provider, the patients, the visitors and relatives from getting HAIs (Coughlan et al, 1996). The study is also aimed at establishing what is already known about IP and also to identify gaps on knowledge and utilization of IP Guidelines by Theatre Nurses. This literature review will look at the variables under study as observed globally, regionally and nationally.

2.2 KNOWLEDGE

Infection Prevention can be traced as far back as biblical times where various methods to prevent spread of infections from people with communicable diseases were used unsuccessfully (Coughlan et al, 1996). From that time scientists and specialists in health care have been working round the clock in order to come up with policies and guidelines in order to reduce the consequences of unsafe health care. It is in this regard that the 57th

World Health Assembly in conjunction with World Health Organization set up The Global Patient Safety Challenge Alliance in Geneva brought together the expertise of specialists from around the world to improve patient safety care and to deliberate on ways to reduce the adverse consequences of unsafe health care. The area chosen for the challenge (2005-2006), was infection associated with health care. This campaign established simple clear standards for hand hygiene, an educational campaign and WHO, s first Guidelines on hand hygiene in health care (Advanced Draft 1). The problem area chosen for second Globe Patient Safety Challenge, in 2007-2008, is the safety of surgical care. The ground work for the project began in autumn 2006 and an international consultation meeting was held in January 2007. Nearly 100 international experts contributed to the document. The guidelines are being pilot tested in each of the six WHO regions to see if health care practitioners are knowledgeable in the use of IPG; studies show that health care practitioners do not use these guidelines. The following studies done in different parts of continents support this statement.

According to Angelillo et al (1999) in a study to evaluate the knowledge, attitude and behaviors of nursing staff with regard to infection prevention, it was established that 10% the respondents were not consistent with the application of infection prevention practices despite being aware of the dangers of not applying the adhering to the IP practices. The majority of nurses agreed that guidelines for disinfection and sterilization practices should be maintained and applied to reduce infections.

Infection Prevention is becoming more and more important in our lives, as we hear more and more outbreaks such as the Ebola virus in Africa. In a study conducted by Wyatt, (1997), quoting Udeze in a study entitled 'reducing and replacing injections' to assess medical doctors knowledge on administering unsafe injections to their patients, a report on the Ebola virus epidemic in Zaire, hospitals were described as 'epidemic amplifiers'. It was found that 72 out of 103 primary cases in Yambuku Mission Hospital were caused by unsterile injections administered by the doctors. During the epidemic, the risk of getting Ebola virus infection from a single injection was greater than 90%. For example,

in Sierra Leone, the study indicated that Lassa fever is transmitted by injections (Wyatt, 1997).

In another study done in Nigeria, Wyatt (1997) quoting Udeze concluded that, at least 1 in every 40 multiple dose injection treatments ended with an injection abscess this was as a result of the popularity of injections probably dates from the great campaigns of the 1920s and 1930s against yaws and other tropical diseases, the results of which were often described as miraculous. Doctors adopted this dangerous route and the syringe as a symbol for health. Following this discovery, other health workers including nurses followed suit.

The recommendations for these studies were that Medical Directors must review their hospital infection prevention guidelines and that every doctor and other health workers must refuse to give injections except when absolutely necessary. It was also emphasized that all injections must be sterile, and the number must also reduce. This clearly shows that medical professionals lacked knowledge on infection prevention guidelines and hence exposed patients to infections.

According to World Health Organization (2003) over 16 billion injections are given every year in developing countries including Zambia. These injections if contaminated with blood can transmit; 8-16 million infections of hepatitis B virus, 2.3 to 4.7 million infections of hepatitis C virus and 80 000-160 000 infections of HIV.

In another study by Nsubuga and Jaakkola (2005) in Uganda entitled “ Needle stick injuries among nurses in Sub-Sahara Africa at Mulango National Referral Hospital on 526 nurses and midwives, indicated a 57% of the nurses and midwives had experienced at least one needle stick injury in the last six months. Only 18% had not experienced any such injury in their entire career. Analysis showed that the most important risk factor for needle stick injuries was lack of training, long working hours more than forty (40) hours a week, recapping needles and not using gloves when handling needles. The study indicates that lack of knowledge; long working hours, working habits and experience are

the predictors for such injuries. The study showed here that the health care practitioners lacked knowledge on the dangers of needle stick injuries.

Another study was done at University of Benin Teaching Hospital (2004) to test health workers knowledge about HIV transmission, Universal Precautions and their attitude towards people living with HIV/AIDS. The study consisted of fifty (50) Doctors from obstetric/gynecology departments, seventy nurses from accident and emergency units namely: labour ward, labour ward theatre, main theatre and family planning clinic. Though many respondents demonstrated knowledge about HIV transmission, more than 25% of them thought that HIV could be transmitted through saliva, vomit, faeces and urine. They underestimated the risk of acquiring HIV infection following needle stick injury, exposure of mucotaneous membrane and intact skin to infected blood and body fluids. There was poor adherence to Universal Precautions which was attributed to lack of knowledge and availability of materials in 48% and 60% of the workers respectively.

From the knowledge and information already stated, I can recommend and conclude that seminars, workshops should be intensified on a continuous basis for health workers on Universal Precautions, stigma and discrimination reduction. The institution should also make available materials needed to protect workers against risk of acquiring pathogenic infections in the course of providing health services to their patients.

Katowa, (2007) in a study to establish the level of health care workers' compliance with Infection Prevention Guidelines and the factors that influence compliance revealed that compliance varied across different components of infection prevention departments and type of procedure. Factors associated with high compliance were inclusion of Infection Prevention Guidelines in training, high knowledge of Infection Prevention Guidelines/Hospital Acquired Infections, positive attitude towards infection prevention and adequate supply of infection prevention materials. The results showed that factors such as number of years in service, management support toward the implementation of IP guidelines and access to IP materials were not significant in relation to compliance.

In order to sensitize the OTD staff on Infection Prevention at UTH and compounded with an increase in HAIs, Professor Odimba (2004) organized a workshop entitled 'Prevention of Nosocomial HIV and all Operating Room Serious Infections for operating theatre staff' in order to improve the knowledge base of theatre staff on infection prevention. Despite the knowledge disseminated at this workshop infection rate among nurses is still on the increase.

Munganga (2007) in a study done at Kitwe Central Hospital to determine the knowledge, attitude and practice of medical doctors on infection prevention, revealed that all the respondents 100% had heard of IP. This indicated that the Medical Doctors had some basic knowledge on IP practices. On attitude the study revealed that majority had negative attitude towards IP practices while 26% had positive attitude towards IP practices. On practice the study showed that 56% of the respondents had sustained needle stick injuries and out of 28 respondents who had sustained needle stick injuries 44% carried out the correct action while 12% of the respondents did not know what to do. All the above studies indicate that knowledge and proper utilization of IPGs is the key to reducing HAIs and injuries to the patient as well as the care giver.

Libetwa (1997) in her dissertation entitled knowledge, Attitude and Practices of Midwives on Infection Control in Maternity Units in Lusaka Urban Clinics, revealed some inconsistency and incorrect use of IP materials as indicated by 12.5% of midwives who wore gloves throughout the shift and 17.5% who wore 3-4 pairs of gloves. This shows lack of knowledge in the utilization of personal protective materials as WHO (1985) only recommends double gloving for health workers performing deliveries and those assisting with surgical procedures.

2.3 UTILIZATION

In an observational study done in France by Tarantola (2006), in reference to Infection Prevention Guidelines utilization by the staff in OTD, a total of 260 operating staff (including 151 surgeons) were investigated. Forty-nine of 260 (18%) staff said they

double gloved for all patients and procedures and changed gloves hourly. Blunt tipped suture needles were available in 49.1% of OTD, 42 of 76 (55.3%) of the surgeons in OTD said they never used them. Overall, 60% and 64% of surgeons had never self-tested for HIV and Hepatitis C Virus (HCV), respectively. Fifty five surgeons sustained a total of 96 needle stick injuries during the month preceeding the survey. Ten of these surgeons had notified only one needle stick injury to the occupational health department of their hospital (notification rate 10.4%). This study concludes that occurrence of needle stick injury remains high in OTD. This poses a risk to the health care workers as well as to the patients as it result in transmission of infectious blood borne diseases such as HIV and Hepatitis B and C virus. It also indicates that although hospitals may improve access to protective device, their utilization of these devices remain very low.

Innaz Semmelweis (1847) observed that the institution of hand-washing by medical students between post mortem examination and contact with labouring women brought about a dramatic reduction in deaths of mothers from puerperal fever, reducing from 11% to below as translated by Carter (1983). The spread of infection via hands is well established (Larson, 1981; Ayliffe et al. 1990). Hand washing is one of the most important procedures for preventing the spread of disease. Hands are the principle route by which cross-infection occurs (Elliot, 1992). Hand washing is an infection control practice with a clearly demonstrated efficacy, and remains the cornerstone of efforts to reduce the spread of infection (Tietjan et al 2003; Central Board of Health 2003). This shows that utilization of IPGs such as hand washing plays a vital role in reducing the rate of HAIs

A study done in the United Kingdom by Ward entitled Infection and risk in operating environments stated the environment of the operating theatre is a major influence in post-operative infections. Factors contributing to this include ventilation, sterilization, and decontamination of equipment and segregation access Zones. The study revealed that between six and seven percent of patients develop infection while in hospital. Infection control policies were analyzed and this revealed differences between policies and practice. Within the same study 147 centers with a total of 438 operating theatre suites

found 28 non-ventilated suites. The recommendations were that these operating suites be phased out as they harbor micro-organisms which contribute to post-operative infections. This study indicates proper utilization of recommended practices is detrimental to infection prevention.

Ansa et al (2002), did a study in Nigeria on Occupational risk of infection by HIV and Hepatitis Virus among health workers. It targeted Doctors, Nurses, Laboratory staff and cleaners in three (3) tertiary health institutions. Results showed that materials and equipment needed for protective and hygienic practices (adequate water supply, protective clothing, and disinfectants) were inadequate in all hospitals. Where available, they were found to be inconsistently used. Health workers in the three institutions were thus constantly exposed unnecessarily to blood and other body fluids which might be potentially infections as well as injury from sharps. This study indicates that use of protective materials and equipment by health workers must be encouraged in order to protect themselves as well as patients.

In yet another study in Nigeria by Utomi (2006) on Occupational exposures and Infection Control among students in three Nigerian Dental Schools, showed that 57 (50.9%) of the students had experienced one or more occupational exposures in the previous six (6) months. The routine use of gloves, masks and protective eye wear was reported by 87.59%, 65.5% and 17% of students respectively. This study indicates a high rate of exposure to body fluids and low compliance with infection control Guidelines. It showed that there is need for interventions to improve safe work practices and use of protective barriers and also that appropriate policies and procedures are needed for reporting and managing exposures.

In Mozambique JHPIEGO in close collaboration with the Mozambique Ministry of Health (MOH) and other partners JHPIEGO has been working to reduce health worker and client exposure to blood-borne pathogens. Through a hands-on approach based on the standardization of care, this initiative has been successfully implemented in 23 hospitals, and is currently being expanded to the remaining 10 hospitals in the country. As part of

this effort, JHPIEGO is developing work place safety and health guidelines, including occupational post-exposure prophylaxis (PEP) for HIV, as well as Infection Prevention Care training materials and job aids for ancillary workers. JHPIEGO is also providing technical assistance to improve the sterilization and waste management systems in United States (U.S.) Government-supported HIV/AIDS treatment sites throughout the country.

Chanda, (1995), on the role of Operational Research in Needle-Stick Prevention at UTH revealed that the institution experienced a high rate of sharp injuries. 59% of people interviewed had sustained needle-stick injuries within the year. Injuries were common among those who recapped needles. 14 (82%) out of 18 Doctors and 12 (67%) out of 20 nurses who recapped needles sustained needle-stick injuries. 13 (39%) out of 33 Porters and Maids sustained injuries from needles and blades.

In another study conducted by Hamomba, (2006), on adherence to Universal Precautions with reference to HIV infection among Midwives and Trained Traditional Birth Attendants during Home and Health Centre deliveries in Siavonga and Mazabuka Districts, it was revealed that the proportion of midwives and nurses adhering to Universal precautions was 63.5%. The most significant factors to this trend were the availability of medical supplies and the inclusion of Universal Precautions in their training. The study indicated that respondents who were trained in Universal Precautions were 24.89 times more likely to adhere. Respondents who received weekly medical supplies were 11.89 times more likely to adhere to Ups than those who received monthly supplies. This point to the fact that knowledge on IP practices as well as availability of medical supplies will affect utilization of IPGs in our institutions.

JHPIEGO and partners are implementing the President's Emergency Plan for AID Relief (PEPFAR) Program to prevent medical transmission of HIV in Zambia. It is also spearheading the assessment and pilot-testing of IPC and Injection Safety Strategies, as well as assisting the Zambian Government in the development, production and dissemination of national IPC guidelines and the Zambia National Infection Implementation Strategy 2005-2007. JHPIEGO continues to support the Zambian

Government in scaling up improved infection safety and IPC programmes national wide in all nine provinces and 72 districts to improve utilization of IPGs in all health care facilities.

2.4 CONCLUSION

A number of documentation reviewed indicates that adhering to the set and stipulated Infection Prevention Guidelines is the key in the prevention of hospital acquired infections and injuries such as needle stick injuries to the care givers. It has also revealed that every worker has the responsibility to observe and implement these measures in their working environment. While some studies have highlighted the importance of knowledge in implementing the IP practices in prevention of HAIs and injuries, others have shown that it does not impact much on utilization as the medical staff may well be aware of the these practices and guidelines but chooses not to use them due to various reasons. This study, therefore, attempts to add on information to existing literature on the knowledge and utilization of Infection Prevention Guidelines by theatre nurses.

CHAPTER 3

3.0 RESEARCH METHODOLOGY

The study is aimed at determining knowledge and utilization of Infection Prevention Guidelines by Theatre and Intensive Care Unit Nurses at University Teaching Hospital. In doing so the following were taken into consideration:

- Research Design and setting
- Population size
- Sample size
- Inclusion and selection criteria
- Data Collection
- Data Analysis Techniques
- Limitation of the study

3.1 RESEARCH DESIGN

A research design is a plan, structure, and strategy of investigations of answering the research question. It is the overall plan or blue-print that the researchers select in order to carry out their study (Basavanthappa, 2006:93).

In this study, a descriptive study design was used. A descriptive research is a broad class of non experimental studies. Its purpose is to observe, describe and document aspects of a situation as it naturally occurs and sometimes to serve as a starting point for the hypothesis generation or theory development. It is commonly used in the field of nursing research (Polit and Beck, 2008:274). The researcher used a non experimental study because no interventions or manipulations were carried out on both the environment and the respondents.

3.2 THE RESEARCH SETTING

Research setting is the physical location and condition in which data collection takes place in a study”, (Pilot and Beck, 2008: 57).

The study was conducted at University Teaching Hospital in Lusaka District. The Hospital is Zambia’s main and biggest referral hospital. It receives referral cases from all over the country. It also provides nursing education, medical education and research. The Hospital is situated in Lusaka, the capital city of Zambia and it is located 4.5 kilometers South end of the city center. The hospital has a bed capacity of 1700 and caters for about 1740 to 2100 patients are seen on a daily basis (UTH Medical Records, 2002).

UTH has four (4) OTDs ; Phase 3, for elective cases from the main wards, Phase 5, for out-patient and emergency cases mainly from casualty and occasionally from the wards, C-block for obstetric\gynaecological cases and D-block for neonatal surgical cases. Within the OTD is also the ICU. These two strategic hospital units cater for patients who have under gone critical care procedures. These units receive patients at risk of acquiring infections as in-patients if the health care providers do not use and are not knowledgeable in following the guidelines for preventing nosocomial infections. The health care providers in these units must wear protective clothing and observe stringent hand washing technique in between patient care and before and after any procedure.

The site was chosen, therefore to identify gaps on the knowledge and utilization of IPGs by Theatre and ICU Nurses. Secondly the site was easily accessible to the researcher.

3.3 STUDY POPULATION

A study population refers to the people that meet the criteria for inclusion in a given universe (Burns and Grove, 2005:342). In this case study population were nurses at UTH.

Target population which refers to the entire number of units under study comprised of Theatre and Intensive care Nurses. This population was chosen because they provide critical care nursing to patients as the patients under go surgical and other critical care procedures which mandate them to constantly utilize the Infection Prevention guidelines. Their IP practices can either minimize or perpetuate the transmission of HAIs among themselves, their clients and the community at large.

3.4 SAMPLE SELECTION

A sample denotes the selected group of people or elements included in a study. Sampling involves selecting a group of people, events, behaviors, or other elements with which to conduct a study (Burns and Grove 2005:341). A convenient sampling method was used. This method involved the use of all available subjects at the research site. This method of sampling despite the risk of having an unrepresentative sample was chosen due to a limited population. At the time the number of nurses in Theatre Department was thirty five (35) and ICU was thirty (30) making a total fifty five (55) nurses.

3.4.1 Inclusion Criteria

All nursing professionals practicing and currently working in OTD and ICU as well as non trained operating theatre nurses who have worked in OTD for more than six (6) months were included in the sample.

Experienced retired OT nurses and OT nurses from private clinics and hospitals who come to do part-time at UTH Theatres were also included in the sample because they are well vested with IP practices.

Nurses who have worked for more than two (2) months in ICU were also included in the sample.

3.4.2 Exclusion Criteria

All non- trained operating theatre nurses who have worked in the department for less than six (6) months and operating trained theatre nurses who are less than two in the department were excluded from the study.

Student theatre trainees were excluded from the sample as they are not always in the clinical area and may not be well vested in IP Practices.

Nurses who have worked for less than two (2) months in ICU were not part of the study.

3.5 SAMPLE SIZE

A sample denotes the selected group of people or elements included in a study (Burns and Grove, 2005:341).

In this study a total of fifty (50) respondents comprised the sample. The reason for selecting this sample size included limited time, inadequate human and financial resources.

3.6 DATA COLLECTION TOOL

A tool in research refers to an instrument or equipment used to collect data (Burns & Grove, 2005:341). Data may be collected on subjects by observing, questionnaires, interview and focused group discussion or any combination of the methods.

3.7 DATA COLLECTION TECHNIQUE

Data collection was done through administering a questionnaire. The investigator obtained consent and proceeded to administer the questionnaires to the respondents who expressed willingness to complete it. Those who were not ready to complete it, collection arrangements were made on the date and time.

Data collection techniques are methods or ways used to collect data to address a research problem. The process started once the investigator got a clearance from the department of Nursing Sciences to go into the field of study. The investigator

used a self administered questionnaire to collect data. For the purpose of learning no research assistant was used for data collection, the researcher collected the whole data herself.

The questionnaire was administered in a private room. Respondents were made comfortable and at ease by greeting each respondent. The investigator introduced herself to the respondent and stated the purpose of the meeting. Each respondent was assured of privacy, confidentiality and anonymity by using serial numbers on each questionnaire. The investigators got consent and proceeded to administer the questionnaires and collected them after a week. After collecting the questionnaires, the investigator checked them for consistency based on the responses and completeness of the tool and then thanked the respondents for taking part in the study.

3.7.1 Validity

Validity is the degree to which an instrument measures what it is intended to measure (Polit and Hungler, 1995:656). In this study, the researcher ensured validity by employing strategies that dealt with threats to validity. These strategies included; appropriate selection of study design, data collection tool and pre-testing research instruments in the pilot study after being checked by the supervising lectures and other experts in the area under study.

Internal Validity

Internal Validity is the extent to which the effects detected in the study are a true reflection of reality rather than the result of extraneous variables (Burns and Grove, 2005:215). Internal validity was ensured through making the questions simple, concise, brief and avoiding repetition of questions as this can make the respondents to alter responses. The researcher constructed the questionnaire in English as she dealt with a literate group. The same instrument was used on all the respondents.

External Validity

This is concerned with the extent to which research findings can be generalized beyond the sample of research participants tested in this study external validity was ensured by relating them to extraneous variables such as number of years spent in theatre and ICU.

External validity was ensured by administering the same questionnaire to all the respondents without changes. The questionnaire was also administered to the respondents without any influence from the investigator.

3.7.2 Reliability

Reliability denotes the consistency of measures obtained in the use of a particular instrument and is an indication of the extent of random error in the measurement method (Burns and Grove, 2005:374). The instrument should be able to bring out the accurate information whereby if the same instrument has to be used after some time, it will produce the same responses.

Reliability was measured by standardizing the instrument. The researcher used experts to review the instrument before going ahead to administer it. The tool was tested before the main study was conducted using a pilot study in a similar characteristics this ensured stability of the data collection tool.

3.8 PILOT STUDY

A pilot study is a small-scale version or trial run of the actual study designed to test the methods to be used in a large, more rigorous study, which is sometimes referred to as the parent study (Polit and Beck, 2008:213). The purpose of the

pilot study is to obtain information for improving the project or assessing its feasibility.

A pilot study was conducted at UTH, D-Block Theatre and Pediatric Intensive care Unit which has similar characteristics as the actual population in which the study was conducted. The pilot study sample constituted 10% of the actual study sample. A sample of 5 Theatre and ICU Nurses was conveniently selected for the pilot study. A pilot study helped the researcher to learn about the strengths and weaknesses of the study design, sample size and data collection instruments and variables. It also helped to assess the appropriateness and clarity of the questions as well as test the feasibility, validity and reliability of the questionnaire.

3.9 ETHICAL AND CULTURAL CONSIDERATIONS

The researcher obtained written permission to collect data for the pilot and actual study from the UTH Managing Director. Verbal permission was sought from each and every respondent. No respondent was forced to take part in the study. The nature and purpose of the study was thoroughly explained to the respondents so that they would be able to make an informed decision and that they had the right to participate or withdraw from the study. The respondents were assured of anonymity and confidentiality. No names were used on the interview schedule except numbers. The completed questionnaire was kept under strict security conditions to avoid unauthorized access to the information that was collected.

4.0 SUMMARY

This chapter has dealt with research methodology which applied to my study. It has stated that a descriptive study design was used as it has described the relationship between the independent and dependent variables which are knowledge and utilization of the Infection Prevention Guidelines by OT and ICU Nurses. The study was conducted at The University Hospital and the study population comprised of fifty (30) Operating Theatre Nurses and (20) Intensive

Care Nurses who were conveniently selected. Data collection was by use of a self administered questionnaire. A pilot study was done in D-Block Theatre and Pediatric Intensive Care Unit at UTH and it constituted 10% of the actual study. The main reason for the pilot study was to test the tool before it can be used on the main study. Ethical considerations were taken into account so as to protect the subjects from any harm either physically, socially, psychologically and financially.

CHAPTER 4

4.0 DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This study sought to determine knowledge and utilization of Infection Prevention Guidelines by Theatre and Intensive Care Nurses at the University Teaching Hospital.

Data analysis is the systematic organization, providing structure to and eliciting meaning from research data. It involves synthesis of research data and testing of research hypothesis using the collected data Polit and Beck (2008). Data was collected using self administered questionnaires which were distributed to fifty (50) respondents.

4.2 Data Analysis

Following data collection, the self administered questionnaires were sorted out and edited for consistency, completeness, legibility and accuracy. The data was categorized which involved identifying and grouping answers that belonged together. All data processing was done manually and then entered on a data master sheet.

4.3 Presentation of Findings

The findings of the study are presented according to the sequence of questions in the questionnaire as a way of facilitating a better and easy understanding of the research findings. The findings of this research have been presented in form of tables, graphs and pie charts and cross tabulation tables to give a vivid illustration of the findings. Some have been grouped together to give an overall picture. The tables are suitable because they summarize the findings in a meaningful way, for easy understanding. The cross

tabulations are helpful in showing relationships between variables. The pie charts and bar charts provide alternative ways of presenting data and have been used to avoid monotony of using one method. The findings of the study have been presented under sections as shown below.

Section A

The tables in section A deals with demographic data of the respondents.

Section B

The tables in section B show the respondents level of knowledge of Infection Prevention Guidelines.

Section C

The tables in section C show the respondents level of utilization of Infection Prevention Guidelines.

PRESENTATION OF FINDINGS

SECTION A

TABLE 5: DEMOGRAPHIC DATA OF THE SAMPLE (n=50)

VARIABLE	FREQUENCY	PERCENTAGE (%)
SEX		
Male	9	18
Female	41	82
TOTAL	50	100
AGE		
24-30	19	38
31-37	17	34
38-43	7	14
44-49	3	6
50-55	2	4

56-61	2	4
TOTAL	50	100
PROFESSIONAL QUALIFICATION		
Registered Nurse	ICU - 5	10%
	OT - 10	20%
Registered Theatre Nurse	ICU - 12	24%
	OT - 13	26%
Registered Midwife	ICU - 0	0%
	OT - 1	1%
Enrolled Nurse	ICU - 2	4%
	OT - 4	8%
Enrolled Theatre Nurse	ICU - 2	4%
	OT - 1	1%
Enrolled Midwife	ICU - 0	0%
	OT - 0	0%
TOTAL	50	100%
NUMBER OF YEARS IN SERVICE		
0-1	6	12
2-5	12	24
6-10	14	28
11-15	6	12
15 and above	12	24
TOTAL	50	100
NUMBER OF YEARS IN OT AND ICU DEPARTMENTS		
0-1	3	6
2-3	18	36

4-6	14	28
7-10	5	10
10 and above	10	20
TOTAL	50	100

Table 5 above shows that majority 82% (41) of the respondents were female with 18% (9) as males. 38% (19) of the respondents were in the age range 24-30 years while 34% (17) were in the age range 31-37 years.

50% (25) of the respondents were Registered Theatre Nurses while 30% (15) were Registered Nurses. 12% (6) were Enrolled Nurses with 6% (3) being Enrolled Theatre Nurses and 2% (1) Midwife.

28% (14) of the respondents had been in the service for 6-10 years. 24% (12) had been in the service for 2-5 years and for 15 and above years while the rest 12% (6) had been working for 0-1 year and 11-15 years respectively.

Regarding number of years in OT and ICU departments 36% (18) of the respondents had been in the department for 2-3 years, 28% (14) between 4-6 years, whilst 20% (10) for 10 years and above.

SECTION B: KNOWLEDGE OF INFECTION PREVENTION GUIDELINES

TABLE 6: DISTRIBUTION OF RESPONDENTS BY HAVING HEARD OF UNIVERSAL PRECAUTIONS\INFECTION PREVENTION GUIDELINES

(n=50)

Hearing about UPIP Guidelines	FREQUENCY	PERCENTAGE
Yes	49	98
No	1	2
TOTAL	50	100

Table 6 shows that the majority 98% (49) of the respondents had heard of UP/IPGs, with an exception of 2% (1) respondent.

TABLE 7: RESPONDENTS KNOWLEDGE ON SOURCE OF INFORMATION ON UP/IPGs (n=50)

SOURCE OF INFORMATION UP/IP Guidelines	FREQUENCY	PERCENTAGE
Clinical area	34	68
Nursing school	10	20
Seminars\workshops	3	6
Medical books	2	4
Not	1	2
Total	50	100

Most 68% (34) respondents’ source of information of UP/IPGs was clinical area 20% (10) from Nursing School, 6% (3) from seminars and 4% (2) from medical books and 2% (1) indicating those who had not heard.

TABLE 8: RESPONDENTS KNOWLEDGE OF THE MEANING OF STANDARD PRECAUTIONS

meaning of Standard utions	FREQUENCY	PERCENTAGE
tionally approved measures prevent health care provider either infecting their patients or ng HAI’s whilst rendering care	30	60
	15	30
know	5	10
L	50	100

Majority 60% (30) of the respondents stated correctly the meaning of standard precautions 30% (15) indicated other meanings and 10% (5) did not attempt to answer.

TABLE 9: RESPONDENTS KNOWLEDGE OF WHAT CONSTITUTES UP/IPG, s
*** MULTIPLE RESPONSE QUESTION-TOTAL DOES NOT ADD UP 100% (50)**

UP/IPGs include the following	FREQUENCY	PERCENTAGE
Hand hygiene	44	88
Use of protective equipment	46	92
Safe and proper waste Management	47	94
Decontamination and Sterilization or HLD	46	92
Bathing everyday	5	10

Table 9 shows the majority 94% (47)indicated safe and proper waste management, 92% (46) mentioned both use of protective equipment and decontamination sterilization and high level disinfection while 10% (5) indicated bathing everyday as some of the UP\IPGs.

TABLE 10: RESPONDENTS DEFINITION OF NOSOCOMIAL INFECTIONS (HAIs)

*** MULTIPLE RESPONSE QUESTION-TOTAL DOES NOT ADD UP TO 100% (50)**

Definition of nosocomial infections (HAIs)	FREQUENCY	PERCENTAGE
An infection due to malpractice by health care provider	23	46
An infection which develops in an in-patient where the incubation period is not known	29	58
An infection which is neither present nor incubating when patient is admitted into hospital	20	40
An infection that the patient comes with from home	0	0
Any infection occurring in the patient's nose	9	18

The majority 58% (29) of the respondents stated nosocomial infection as an infection which develops in an in-patient where the incubation period is not known, 46% (23) stated that it is an infection due to malpractice by health care provider while 40% (20) stated that it is an infection which is neither present nor incubating when patient is admitted into hospital. 18% (9) gave wrong answers while 82% (41) gave correct answers.

TABLE 11: RESPONDENTS KNOWLEDGE OF KNOWN HOSPITAL ACQUIRED INFECTIONS

*** MUTIPLE RESPONSE QUESTION-TOTAL DOES NOT ADD UP TO 100% (50)**

Known Hospital Acquired Infections	FREQUENCY	PERCENTAGE
Post operative wound infections	49	98
Pneumonia	43	86
Tuberculosis	49	98
Diabetes mellitus	0	0
Cancer	0	0

Table 11 above indicates that 100% (50) knew the HAIs.

TABLE 12: RESPONDENTS KNOWLEDGE ON PREVENTION OF HOSPITAL ACQUIRED INFECTIONS

*** MULTIPLE RESPONSE QUESTION-TOTAL DOES NOT ADD UP TO 100% (50)**

Prevention of Hospital Acquired Infections	FREQUENCY	PERCENTAGE
Hand hygiene	50	100
Sterilization, HLD and contamination of instruments	49	98
Use of aseptic technique	49	98
Use post exposure prophylaxis	24	48
Avoid eating in hospital	4	8

Table 12 shows 100% (50) response to hand hygiene as being the principle method to prevention of HAIs and the least 8% (4) stated to avoid eating hospital.

TABLE 13: RESPONDENTS DEFINITION OF INFECTION PREVENTION

*** MULTIPLE RESPONSE QUESTION-TOTAL DOES NOT ADD UP TO 100% (50)**

Definition of Infection Prevention	FREQUENCY	PERCENTAGE
Elimination of infection	20	40
Reduction of infection	27	54
Control of infection	41	82
Stop the spread of infection	35	70
To be cured	1	2

The majority 82% (41),70% (35), 54% (27), and 40% (20) were able to state correctly the definition of Infection Prevention where as only 2% (1) was unable to.

TABLE 14: RESPONDENTS KNOWLEDGE OF THE ADVANTAGES OF IP TO CLIENTS

***MULTIPLE RESPONSE QUESTION-TOTAL DOES NOT ADD UP TO 100% (50)**

Advantages of Infection Prevention to clients	FREQUENCY	PERCENTAGE
Prevent infection	50	100
Reduces hospital stay	47	94
Increases mortality and morbidity rates	2	4
Increases hospital stay	1	2
Reduces conflicts with staff	1	2

All 100% (50) respondents stated to prevent infection as the main advantage of infection prevention to clients, 94% (47) stated reduces hospital stay while others were unable to with 4% (2) stating increases mortality and morbidity rates, 2% (1) increases hospital stay, 2% (1) stated reduces conflicts with staff.

TABLE 15: RESPONDENTS KNOWLEDGE OF ADVANTAGES OF IP TO THE INSTITUTION

*** MULTIPLE RESPONSE QUESTION-TOTAL DOES NOT ADD UP TO 100% (50)**

Advantages of Infection Prevention to the institution	FREQUENCY	PERCENTAGE
Reduces on the cost of purchasing medical surgical supplies	39	78
Helps to decongest the hospital	44	88
Helps improve the quality of care provided	43	86
Helps render the hospital a dangerous working environment	4	8
Makes the hospital tidy	17	34

In table 15 above, 88% (44) of the respondents indicated that IP helps to decongest the hospital,86% (43)said it helps improve the quality of care provided with the least 8% (4 indicating helps render the hospital a dangerous working environment.

TABLE 16: DISTRIBUTION OF RESPONDENTS BY HAVING HEARD ABOUT POST EXPOSURE PROPHYLAXIS AND WHAT IT INVOLVES.

Heard about of Post Exposure Prophylaxis	FREQUENCY	PERCENTAGE
Yes	48	96
No	2	4
TOTAL	50	100
If Yes , state what it involves		
First Aid, Assess for injury, Test for HIV for both source patient and staff, Start ARVs within 72 hours for 4 weeks	3	6.25
Assessment of injury, Test for HIV for both source patient and staff, Start ARVs within 72 hours for 4 weeks	16	33.3
Test for HIV of both source patient and staff and start ARVs within 72 hours for 4 weeks	8	16.6
Start therapy with ARV,s if non-reactive in first 72 hours for 4 weeks	1	2
Assess injury, Start ARVs within 72 hours for 4 weeks	3	6.2
No response	17	35.4
	48	100

Majority 96% (48) of the respondents stated that they have heard about post exposure prophylaxis with 4% (2) who have not. The majority 33.3% (16) respondents stated that they should assess for injury, test for HIV for both source patient and staff then start ARVs within 72 hours after being

counseled, while the least 2% (1) indicated that you should straight away start ARVs within 72 hours for 4 weeks.

TABLE 17: RESPONDENTS KNOWLEDGE OF THE AVAILABILITY OF NURSING AND MEDICAL SUPPLIES

State the availability of Nursing and Medical care items for IP practices	FREQUENCY	PERCENTAGE
Always available	4	8
Mostly available	35	70
Occasionally available	11	22
Never available	0	0
TOTAL	50	100

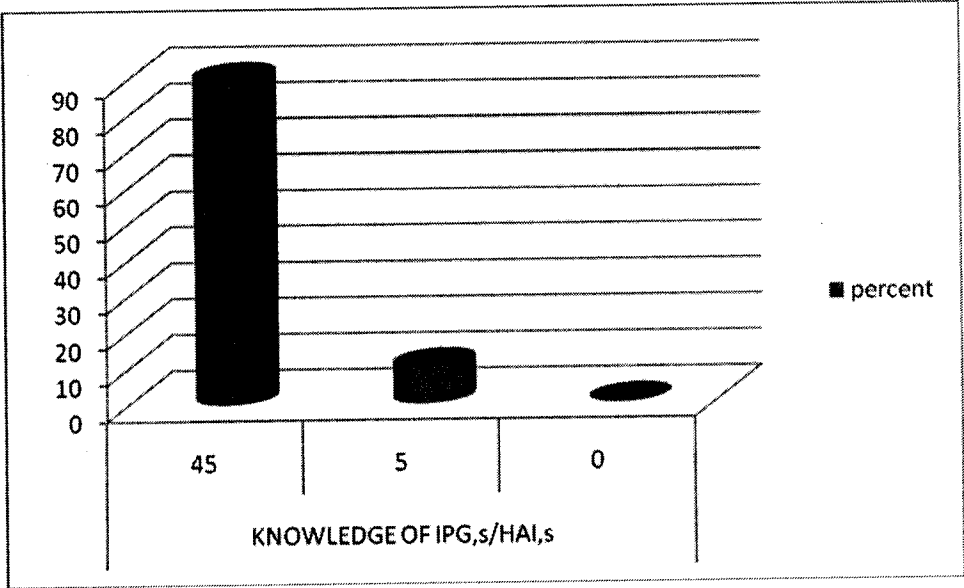
Majority 70% (35) of the respondents stated that Nursing and Medical care items are mostly available while 22% (11) stated they are occasionally available and 8% (4) stated they are always available.

TABLE 18: RESPONDENTS KNOWLEDGE OF MANAGEMENT SUPPORT OF IP PRACTICES

Does Management monitor utilization of IP practices	FREQUENCY	PERCENTAGE
YES	28	56
NO	22	44
TOTAL	50	100

Majority 56% (28) of the respondents stated management support of IP practices through purchase of some IP materials and random checks whilst 44% (22) denied management support.

FIGURE 2 : LEVEL OF KNOWLEDGE OF INFECTION PREVENTION/HOSPITAL ACQUIRED INFECTIONS



The majority 90% (45) of the respondents had high level knowledge 10% (5) had moderate level knowledge of Infection Prevention/Hospital Acquired Infections while none had low level knowledge.

SECTION C: UTILIZATION OF INFECTION PREVENTION GUIDELINES

TABLE 19: FREQUENCY OF HAND HYGIENE

Frequency of hand hygiene	FREQUENCY	PERCENTAGE
Before and after each patient contact	10	20
After each patient contact	21	42
Before each patient contact	19	38
Hand washing not essential Before and after each patient contact	0	0
TOTAL	50	100

Table 19 above shows that the majority 42% (21) of the nurses indicated that they wash their hands after each patient contact. 38% (19) stated that they wash their hands before each patient contact whilst 20% (10) stated they washed their hands before and after each patient contact and none stated that hand washing was not essential before and after each patient contact.

TABLE 20: RE-USE OF NEEDLES, SYRINGES AND REASONS FOR THE ANSWER

Re-use of needles\syringes	FREQUENCY	PERCENTAGE
Yes	0	0
No	50	100
Total	50	100
Reasons for not re-using needles /syringes		
To prevent spread of infection	27	54
Disposable therefore single use	9	18
No reason	14	28
TOTAL	50	100

All 100% (50) respondents denied re-using needles and syringes. Reason for the answer, 54% (27) stated to prevent spread of infection, 18% (9) stated they are disposable, therefore, single use while 28% (14) gave no reason.

TABLE 21: RE-USE OF GLOVES

Re-use of gloves	FREQUENCY	PERCENTAGE
Yes	1	2
No	49	98
TOTAL	50	100

Majority 98% (49) of the respondents denied re-using gloves with an exceptional of only 2% (1).

TABLE 22: DECONTAMINATION OF NEEDLES AND SYRINGES

PROCESS OF DISPOSAL	FREQUENCY	PERCENTAGE
Decontaminate three times with 0.5% chlorine before disposal in a puncture proof safety box	41	82
Bend or break the needle prior to disposal	1	2
Remove the needle from the syringe after decontamination and dispose the needle into the sharp box	2	4
Recap needle after use and dispose into the sharp box	0	0
Dispose needle and syringe immediately after use into the puncture proof safety box	6	12
TOTAL	50	100

Table 22 above shows that only 12% (6) of the respondents dispose of needles and syringes in a proper manner indicating best practice in utilizing IPGs in respect to decontamination of needles and syringes while others indicated other methods.

TABLE 23: DECONTAMINATION OF GLOVES

What is done to the gloves after use	FREQUENCY	PERCENTAGE
Decontaminate in 0.5% chlorine for a few minutes before disposal	20	40
Remove without decontamination and dispose them immediately	27	54
Clean under running water then decontaminate them	2	4
Clean under running water remove and dispose them	1	2
TOTAL	50	100

Table 23 above indicates that 54% (27) of respondents do not decontaminate their gloves before disposal.

TABLE 24: METHOD OF DISPOSING SHARP BOX

Method of disposing of used sharp box	FREQUENCY	PERCENTAGE
Incineration when box is three quarter full	18	36
Incineration when box is full	30	60
Don't know	2	4
TOTAL	50	100

Majority 60% (30) of respondents stated incineration when box is full while only 36% (18) stated that the box should be disposed when three quarter full and 4% (2) did not know.

Table 25: INCIDENCE OF SUSTENANCE OF NEEDLE STICK INJURIES IN THE LAST 12 MONTHS AND PROCEDURE THAT FOLLOWED AFTER SUSTAINING NEEDLE STICK INJURY

Sustained needle stick injuries in the last 12 months		
Yes	8	16
No	42	84
TOTAL	50	100
Procedure followed after sustaining a needle stick injury		
Squeezed the area only	2	25
Reported to IP Officer for counseling and commenced on PEP	1	12.5
Squeezed blood, reported to IP officer for counseling and Commenced on PEP	2	25
Did nothing	3	37.5
Total	8	100

Majority 84% (42) of respondents have never had any needle stick injury in the last 12 months prior to the exercise, while 16% (8) reported having had needle stick injuries, of the 8 respondents only 25% (2) took the correct action after needle stick injury while 37.5% (3) out of the 8 respondents did not take the correct action and another37.5% (3) did not take any form of action.

TABLE 26: RECOMMENDATIONS TOWARDS IMPROVING UTILIZATION OF INFECTION PREVENTION PRACTICES. *MULTIPLE RESPONSE QUESTION-TOTAL DOES NOT ADD UP TO 100%

(50).

Recommendations towards improving utilization of Infection Prevention guidelines	FREQUENCY	PERCENTAGE
Knowledge dissemination on IP practices and guidelines to all staff by focal persons	29	58
Beef up staffing levels	7	14
Senior management support and involvement in procuring required resources and materials for IP practices	29	58
Monitor and evaluate practice	11	22
Display of guidelines on IP practices and PEP in work areas	6	12

The majority 58% (29) of the respondents recommended knowledge dissemination on IP practices and guidelines to all staff by the concerned focal persons and another 58% (29) also recommended Senior Management support with 12% (6) recommending display of guidelines on IP practices and PEP in work places.

TABLE 27: ATTENDANCE OF WORKSHOPS/SEMINARS ON UTILIZATION OF IPGs

Have you attended any seminar or workshop on the utilization of IPGs in your nursing practice	FREQUENCY	PERCENTAGE
YES	21	42
NO	26	52
NO RESPONSE	3	6
TOTAL	50	100

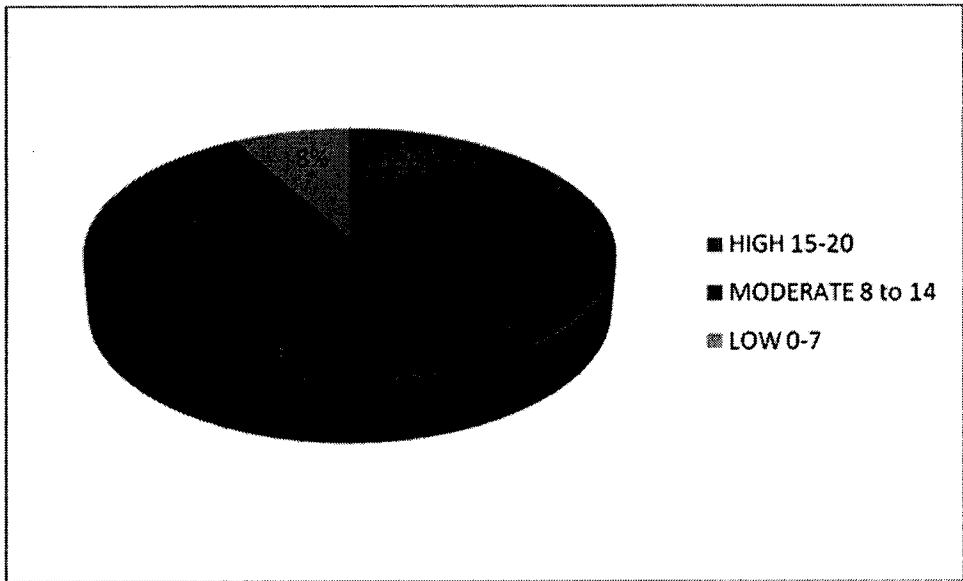
Majority 52% (26) of the respondents denied attending any workshop/seminar on the utilization of IPGs whilst 42% (21) stated they had.

TABLE 28: DISPLAY OF IPGs AT EACH CLINICAL AREA (WARD)

Does Nursing Management display IPGs at each clinical area (ward)	FREQUENCY	PERCENTAGE
YES	44	88
NO	6	12
TOTAL	50	100

Majority 88% (44) of the respondents indicated Nursing Management displays IPGs whilst 12% (6) indicated they do not.

FIGURE 3: UTILIZATION OF INFECTION PREVENTION GUIDELINES



The majority 80% (40) of the respondents had moderate utilization of the IPG's 12% (6) had high utilization while 8% (4) had low utilization of IPG, s.

SECTION D: RELATIONSHIP BETWEEN VARIABLES

**TABLE 29: KNOWLEDGE OF INFECTION PREVENTION GUIDELINES
IN RELATION TO SEX**

LEVEL OF KNOWLEDGE OF IPG's IN RELATION TO SEX	SEX		TOTAL
	Male	Female	
HIGH	8 (88.8%)	37 (90.2%)	45 (90%)
MODERATE	1 (11.1%)	4 (9.7%)	5 (10%)
LOW	0 (0%)	0 (0%)	0 (0%)
TOTAL	9 (18%)	41 (88%)	50 (100%)

Table 29: shows that 88.8% (8) out of 9 male respondents had high knowledge of IP guidelines and 11.1% (1) had moderate knowledge while 90.2% (37) female respondents out of 41 female respondents had high knowledge and 9.7% (4) female respondents out of 41 had moderate knowledge.

TABLE 30: KNOWLEDGE OF IPG's IN RELATION TO AGE

LEVEL OF KNOWLEDGE OF IPG's IN RELATION TO AGE	AGE IN YEARS						TOTAL
	24-30 YRS	31-37 YRS	38-43 YRS	44-49 YRS	50-56 YRS	56-61 YRS	
HIGH	94.1 %	94.7%	85.7%	66.7%	100%	50%	90%
MODERATE	5%	5.3%	14.3%	33.3%	0%	50%	10%
LOW	0%	0%	0%	0%	0%	0%	0%
TOTAL	34%	38%	14%	6%	4%	4%	100%

Table 30 shows that 18 (94%) out of 19 respondents in the age range 31-37 had high knowledge of IPGs, 1 (5.3%) in the same age group had moderate knowledge while 2 (100%) in the age range 50-56 had high knowledge and none had moderate in the same age group.

TABLE 31: KNOWLEDGE OF IPGs IN RELATION TO PROFESSIONAL QUALIFICATION

LEVEL OF KNOWLEDGE IN RELATION TO PROFESSIONAL QUALIFICATION	PROFESSIONAL QUALIFICATION						TOTAL
	RN	RTN	RM	EN	ETN	EM	
HIGH	100%	92%	100%)	66.7%	66.7%	0%	90%
MODERATE	0%	8%	0%	33.3%	33.3%	0%	10%
LOW	0%	0%	0%	0%	0%	0%	0%
TOTAL	30%	50%	2%	12%	6%	0%	100%

Table 31 shows that 100% (15) Registered Nurses 1% (1) Registered Midwife and 92% (23) out of 25 Registered Theater Nurses exhibited high knowledge in Infection

Prevention Guidelines compared to 2 (33.3%) out of 6 Enrolled Nurses who had moderate knowledge.

TABLE 32: KNOWLEDGE IN RELATION TO NUMBER OF YEARS IN SERVICE

LEVEL OF KNOWLEDGE IN RELATION TO NUMBER OF YRS IN SERVICE	NUMBER OF YEARS IN SERVICE					TOTAL
	0-1 YR	2-5 YRS	6-10 YRS	11-15 YRS	MORE THAN 15 YRS	
HIGH	100%	83.3%	100%	83.3%	83.3%	90%
MODERATE	0%	16.7%	0%	16.7%	16.7%	10%
LOW	0%	0%	0%	0%	%	%
TOTAL	12%	24%	28%	12%	24%	100%

Table 32 shows that most 100% (14) of the respondents who had high knowledge in IPGs had worked for 6-10 years compared to 16.7% (2) who hard worked for 2-5 years.

TABLE 33: KNOWLEDGE IN RELATION TO CURRENT PERIOD IN DEPARTMENT

LEVEL OF KNOWLEDGE IN RELATION TO CURRENT PERIOD IN DEPT	CURRENT PERIOD IN DEPARTMENT					TOTAL
	0-1 YR	2-3 YRS	4-6 YRS	7-10 YRS	ABOVE 10 YRS	
HIGH	100%	94.4%	100%	100%	70%	92%
MODERATE	0%	2%	0%	0%	30%	8%
LOW	0%	0%	0%	0%	0%	0%
TOTAL	6%	36%	28%	10%	20%	100%

Table 33: shows that 100% (3) of the respondents who had high knowledge in IPG,s had worked in the department for 0-1 year to 3 (30%) who have worked for 10 and above years.

TABLE 34: UTILIZATION OF IPG’s IN RELATION TO SEX

LEVEL OF UTILIZATION OF IPG’s IN RELATION TO SEX	SEX		TOTAL
	MALE	FEMALE	
HIGH	11.1%	12.2%	12%
MODERATE	88.9%	78%	80%
LOW	0%	9.8%	8%
TOTAL	18%	88%	100%

Table 34 shows that 12.2% (5) female respondents had high utilization compared to 1 (11%) male respondents who had high utilization. Most 88.9% (8) of the male respondents had moderate utilization.

TABLE 35: UTILIZATION OF IPG’s IN RELATION TO AGE

LEVEL OF UTILIZATION OF IPG’s IN RELATION TO AGE	AGE IN YEARS						TOTAL
	24-30 YRS	31-37 YRS	38-43 YRS	44-49 YRS	50-55 YRS	56-61 YRS	
HIGH	0%	10.5%	42.9%	0%	0%	0%	10%
MODERATE	82.4%	89.4%	42.9%	100%	100%	100%	82%
LOW	17.6%	0%	14.2%	0%	0%	0%	8%
TOTAL	34%	19%	14%	6%	4%	4%	100%

Table 35 shows that 89.4% (17) of the respondents in the age group ranging 31-37 years had moderate utilization compared to 2 (10.5%) who had high utilization of IPG,

TABLE 36: UTILIZATION IN RELATION TO PROFESSIONAL QUALIFICATION

LEVEL OF UTILIZATION IN RELATION TO PROFESSIONAL QUALIFICATION	PROFESSIONAL QUALIFICATION						TOTAL
	RN	RIN	RM	EN	ETN	EM	
HIGH	0%	10%	0%	0%	0%	0%	10%
MOEDRATE	86.7%	76%	100%	83.3%	100%	0%	82%
LOW	13.3%	4%	0%	16.7%	0%	0%	8%
TOTAL	30%	50%	0%	12%	6%	0%	100%

Table 36 shows that 83.3% (5) Enrolled Nurses had moderate utilization out of 6 (12%) with non having high utilization compared to 5 (10%) Registered Theatre Nurses who had high utilization out of 25 (50%) and the rest 19 (76%) had moderate utilization.

TABLE 37: UTILIZATION IN RELATION TO NUMBER OF YEARS IN SERVICE

LEVEL OF UTILIZATION IN RELATION TO NUMBER OF YEARS IN SERVICE	NUMBER OF YEARS IN SERVICE					TOTAL
	O-1 YR	2-5 YRS	6-10 YRS	11-15 YRS	15 YRS AND ABOVE	
HIGH	0%	0%	14.4%	33.3%	16.7%	12%
MODERATE	83.3%	83.3%	85.7%	50%	83.3%	80%
LOW	16.7%	16.7%	0%	16.7%	0%	8%
TOTAL	12%	24%	28%	12%	24%	100%

Table 37 shows that the nurses 33.3% (2) who have been in the service for 11-15 years had high utilization of IPG,s compared to 2 (14.3%) who has been in service for 6-10 years.

TABLE 38: UTILIZATION IN RELATION TO PERIOD IN DEPARTMENT

LEVEL OF UTILIZATION IN RELATION TO PERIOD IN DEPARTMENT	PERIOD IN DEPARTMENT					TOTAL
	0-1 YR	2-3 YRS	4-6 YRS	7-10 YRS	10 YRS AND ABOVE	
HIGH	0%	16.7%	7.1%	0%	10%	10%
MODERATE	100%	72.2%	85.7%	100%	80%	82%
LOW	0%	11.1%	7.1%	0%	10%	8%
TOTAL	6%	36%	28%	10%	20%	100%

Table 38 shows that OTN and ICU Nurses 16.7% (3) who have been in the department for 2-3 years have high utilization of IPG,s than those 10% (1) who have been in the department for 10 years and above.

RELATIONSHIP AMONG KNOWLEDGE AND UTILIZATION OF IPG's
TABLE 39: DISTRIBUTION OF RESPONDENTS LEVEL OF KNOWLEDGE
IN RELATION TO UTILIZATION OF IPG's (n=50)

UTILIZATION OF IPG's	KNOWLEDGE OF IPG's			TOTAL
	HIGH	MODERATE	LOW	
HIGH	13.3%	0%	0%	12%
MODERATE	80%	80%	0%	80%
LOW	6.7%	20%	0%	8%
TOTAL	90%	10%	0%	100%

Table 39 shows that only 6 (13.3%) respondents both OTN and ICU Nurses had both high knowledge with high utilization while the majority 36 (80%) had high knowledge with moderate utilization of IPG, s.

4.4 CONCLUSION

In conclusion chapter 4 has looked at data analysis and presentation of findings. In the presentation of findings, frequency tables; pie charts; bar charts; and cross tabulation tables have been used. It has been noted that most of the respondents involved in the study demonstrated high knowledge in IPGs, where as the utilization of IPG,s is moderate among the majority of the respondents involved in the study.

CHAPTER FIVE

5.0 DISCUSSION OF FINDINGS AND IMPLICATIONS FOR HEALTH CARE SYSTEM

5.1 INTRODUCTION

The discussion of the study is based on analysis of data collected from a sample of fifty (50) respondents using a self administered questionnaire. The study was aimed at determining the knowledge and utilization of Infection Prevention Guidelines by Operating Theatre and Intensive Care Unit Nurses at the University Teaching Hospital in Lusaka. The findings generally revealed that most of the respondents had moderate utilization of Infection Prevention Guidelines.

5.2 CHARACTERISTICS OF THE SAMPLE

The study was carried out in the Operating Theatre and Intensive Care Unit departments and the sample was gender biased. This showed that 82% of the nursing professionals is still female dominated. This finding is similar to the one undertaken by Katowa (2007) in her study of the extent of compliance of healthcare workers' adherence to infection prevention guidelines.

Most of the respondents were aged between 24 and 30 years followed by 34% in the age group 31 and 37 years, while the least 4% fell within the age ranges of 50 to 55 years and 56 to 61 years. The explanation for the scenario above could be that, most of our government health institutions attract a lot of new graduates before they gain experience while the limited numbers of those within the age groups 50 to 55 and 56 to 61 is due to various reasons among them being retirement, brain drain to both local health institutions, neighboring countries and abroad in search of better paid jobs with better conditions of service. The same reasons could be given to the small percentage as seen among those who had worked for 11-15 years where as for those who have worked from 0 to 1 year, the reasons could be due to non-retention of most of the newly qualified nurses both

general and those who have specialized due to the same brain drain for better conditions of service. The slight increase 24% of those who had worked for 15 years and above points to the fact that most of these nurses could have retired and are employed on part-time or contract basis to cushion the critical nursing staff the health institutions are facing country wide. These findings are in line with the findings by Munganga (2007) in her study of knowledge Attitude and Practices of Medical Doctors on Infection Prevention as well as Katowa's study (2007) on the level of compliance of health workers' compliance with Infection Prevention Guidelines and the factors that influence compliance.

On the number of years in OT and ICU Departments, the study shows that 36% of the respondents had been in the departments for 2-3 years meaning that these are nurses with specialization in critical care nursing and therefore posted to their area of specialization. The same explanation could be attributed to 28% and 20% of the respondents who have been in the same departments for 4-6 years and for 10 and above years. These areas being their area of specialization these nurses tend to stay longer in these departments where they are most effective.

The distribution of the sample catered across the nursing profession with the most 50% being Registered Theatre Nurses and 30% Registered Nurses. This is due to the fact that the Theatre Nursing School stopped offering theatre nursing to enrolled nurses at the same time there are very few opportunities for enrolled nurses to specialize in ICU nursing both locally and abroad.

5.3 DISCUSSION OF VARIABLES

5.3.1: KNOWLEDGE

The study under discussion looked at two (2) variables that are knowledge and utilization of Infection Prevention Guidelines by OT and ICU Nurses.

The study findings showed that almost (98%) of the respondents had heard of Infection Prevention Guidelines or Universal Precautions. This indicated that OT and ICU Nurses had some knowledge in this area and as such they contribute in reducing the risk of contracting infections as they render nursing care. The study further revealed that 68% of the respondents source of information was clinical area while 20% were from Nursing Schools. This signifies the importance of strengthening the IP component both in the clinical area as well as in the school curriculum. This finding agrees with the findings by Munganga (2007) quoted above where (100%) of the respondents had heard of IP. The study also showed that majority (60%) of the respondents knew the meaning of Standard Precautions as Internationally approved measures which prevent health care providers from either infecting their patients or acquiring Hospital Acquired Infections themselves while rendering care.

According to the findings of the study, most of the respondents knew the commonest Universal precautions or Infection Prevention Guidelines as safe and proper waste disposal, decontamination and sterilization or high level disinfection, use of protective equipment, and hand hygiene. This is probably the reason why most respondents mentioned the clinical area as the source of information of UP/IPGs because this is where all the above are practised. Majority of the respondents were able to correctly define nosocomial infections as well as give correct examples of HAIs as post operative wound infections, pneumonia and tuberculosis. This is a positive finding compared to Katowa's findings in the study mentioned above that some health workers indicated malaria, scabies and mumps as some of HAIs.

Knowledge of Infection prevention/Hospital Acquired Infections according to the findings of the study was high among the respondents as the majority correctly stated the definition of Infection Prevention, advantages of IP to clients as well as to the institution. The majority of the respondents stated that they had heard about post exposure prophylaxis and stated the process of post exposure prophylaxis correctly. This implies that knowledge dissemination on IP/HAIs is adequate among OT and ICU nursing staff at the institution and the trend should continue. The findings goes to prove the importance

that management attaches to IP/HAls as indicated by 70% of the respondents who indicated that nursing and medical care items were mostly available and about 56% of the respondents indicated that management supports IP practices through purchase of some IP materials and carry out random checks on IP practices. This entails that management should strive to provide the necessary equipment and materials in order to enhance good IP practices.

The general picture with regard to OT and ICU Nurses knowledge of IP/HAls is that the majority (90%) of the respondents had high level knowledge, (10%) had moderate level knowledge and none had low level knowledge. These findings are consistent with a study by Wyatt (1997) quoting Udeze in Zaire and Nigeria where medical Doctors had high knowledge on the dangers of using multiple dose injection treatments as well as using unsterile injections but nevertheless continued with this dangerous practice because patients had trust in injections.

Contrary to the study undertaken by Ofili and Sogbeson as reported by Munganga (2007) it was found that nurses had inadequate knowledge of IP practices which led to poor utilization of IPGs and recommended that IP be introduced into nursing curriculum.

The above results answered the first objective which sought to determine the level of knowledge of Infection Prevention Guidelines by OT and ICU Nurses.”

5.3.2 UTILIZATION

Section C of the questionnaire contains questions which facilitated the identification of the respondents' utilization of Infection Prevention Guidelines. Utilization of IPGs plays an important role in prevention of Hospital Acquired Infections.

The study revealed that 12% had high utilization of IPGs' while majority of the respondents 80% had moderate utilization of IPGs, and 8% had low utilization. This possess a challenge to the IP committee and needs it to focus on the practice by constantly checking on the IP practices in order to determine utilization of IPGs' by OT and ICU Nurses. This study revealed that when asked on the frequency of hand hygiene, majority 42% of the respondents indicated that this is done after each patient contact,

38% stated before each patient contact, 20% stated before and after each patient contact and none indicated hand washing was not essential before and after each patient contact. This shows that the respondents have not embraced hand hygiene as one basic precaution to be practiced by all health care providers in preventing HAIs' as failure to perform appropriate hand hygiene is considered to be the leading cause of nosocomial infections. All 100% of the respondents indicated that they did not re-use needles and syringes. The same findings applied to the re-use of gloves where majority 98% indicated they did not re-use gloves. The reasons given by respondents for not re-using needles and syringes, majority 54% stated to prevent spread of infection, 18% stated that they are disposable therefore they are supposed to be used only once while 28% were silent on the issue. These findings are consistent with the findings of Katowas' study where all 100% of the health care workers interviewed indicated that they did not re-use needles and syringes. This observation is a great achievement on the part of the nurses in reducing the spread of infections compared with a study conducted by Wyatt (1997) in Zaire which revealed that 72 out of 103 primary cases of Ebola virus infection were caused by unsterile injections administered by the doctors.

On decontamination of needles and syringes the findings showed that only 12% of the respondents disposed of needles and syringes in a proper manner indicating best practice in utilizing IPGs leaving the majority of the respondents with poor practice. The same finding applies to decontamination of gloves where 54% of the respondents did not decontaminate their gloves before disposal. On the disposal of sharp box only 36% stated that the sharp box should be disposed by incineration when three quarter full while the majority 60% stated incineration when box is full and 4% did not know. This poses a risk to the nursing staff as well as other cadres as it will predispose them to needle stick injuries. All in all the above findings show moderate to low utilization of IPGs despite respondents having high knowledge.

Regarding needle stick injuries, 16% (8) of the respondents reported having had a needle stick injury in the last 12 months prior to the study. This result is slightly higher compared to 9.1% reported by Katowa (2007) and much more lower compared to 56%

reported by Munganga (2007). Out of 8 respondents who had needle stick injuries only 25% (2) followed the right PEP procedure and the rest did not while 37.5% (3) did not take any form of action. Among the reasons cited for those who did not take any form of action is that they were alone on duty therefore could not handover to anyone and had to continue assisting with the operation despite the injury. This study finding agrees with the study done in France by Tarantola (2006) on assessment of preventive measures for accidental blood exposures in reference to IPGs utilization by the staff in OTD where fifty five surgeons sustained a total of 96 needle stick injuries during the month proceeding to the survey. Ten of these surgeons had notified only one needle stick injury to the occupational health department of their hospital (notification rate 10.4%). This indicates that occurrence of needle stick injury remains high in critical care areas such as OT and ICU. This poses a risk to the health care workers as well as patients as it results in transmission of infectious blood borne diseases such as HIV and Hepatitis B and C virus. These results are also in line with those of Nsubuga and Jaakkola (2005) in Uganda 57% of nurses and midwives had experienced at least one needle stick injury in the last six months. The study indicated long working hours more than forty (40) hours a week, lack of training and bad working habits such as recapping needles and not using gloves when handling needles as some of the predictors for such injuries.

On recommendations towards improving utilization of utilization of IP practices the majority 58% of the respondents suggested that senior management support and involvement should be a priority by way of procuring required resources and materials for IP practices. Another 58% suggested knowledge dissemination on IP practices and guidelines to all staff by the focal persons. While majority 88% of the respondents indicated that nursing management displays IPGs at each clinical area, 52% of the respondents denied ever attending any workshop/seminar on the utilization o IPGs. 80% of the respondents had moderate utilization, 12% had high utilization while 8% had low utilization.

The study further revealed that there was no relationship between utilization and the levels of knowledge as the study shows that only 13.3% OTN and ICU Nurses had both

high knowledge and high utilization, 80% respondents who had high knowledge had moderate utilization while 6.7% who had high knowledge had low utilization. This could be due to a number of reasons some of them cited by the respondents as being workload, under staffing, non-dissemination of information on the latest trends in IP Practicess by the focal persons and lack of management support in relation to organizing workshops/seminar on the utilization of IPGs. If the above reasons were dealt with by all concerned, utilization of IPGs can be improved. The objective to determine utilization of IPGs by OT and ICU Nurses has been met.

5.4 IMPLICATIONS TO THE HEALTH CARE SYSTEM

The implications of this study fall under four (4) main headings which are related to the problem under study, its objectives and hypothesis. The study revealed that 80% of the respondents had high levels of knowledge all across the nursing cadres involved in the study. This indicates that the respondents had high knowledge regarding IPGs.

Another observation noted is that despite the respondents having high levels of knowledge regarding IPGs the majority 80% had moderate utilization. All these findings have implications to the health care system namely; Practice, Research, Education and Administration.

5.4.1 PRACTICE

The findings have shown that the majority of the respondents had moderate utilization meaning they do not comply with IPGs despite having high knowledge. The OT and ICU are strategic hospital units catering for patients who under go critical care procedures and as such this requires the nurses working in these areas to adhere to IPGs in order to protect themselves, the clients and the community at large from acquiring nosocomial infections. This will also help reduce the hospital stay, reduce infection rates and needle stick injuries among medical staff and in turn help to create a safe working environment.

5.4.2 ADMINISTRATION

The results of this study revealed a significant association between utilization of IPGs and availability of resources and materials for IP practices. The study also highlighted

knowledge dissemination on IP practices as being inadequate. The Nurse Administrators should therefore, ensure that there is adequate provision of necessary materials for IP practices. In addition they should ensure that there is information dissemination on IP practices to all staff by the focal persons by constantly monitoring IP practices. The hospital management needs to support the IP programme through purchase of necessary materials to ensure a constant supply .This will improve utilization of IPGs by OT and ICU Nurses.

5.4.3 NURSING EDUCATION

This therefore means that the nursing curriculum should include IP component to be taught to students. The study has also indicated that there is need for continued in-service training for the practising nurses so that they get a braced with the IPGs.

5.4.4 NURSING RESEARCH

According to findings of this study, the rate of nosocomial infections continues to increase in our health institutions despite that the majority of the respondents having high knowledge. This entails that more studies need to be conducted to further explore this subject and this can help develop new strategies on how best to improve utilization of IPGs among nurses.

5.5 RECOMMENDATIONS

The study has identified gaps in utilization of Infection Prevention Guidelines by OT and ICU Nurses. In order to overcome these challenges, the researcher is therefore making the following recommendations:

5.5.1 TO THE MINISTRY OF HEALTH

Ministry of Health (MOH) should consider increasing funding for research programmes dealing with issues of Infection Prevention because this is the priority area in the provision of quality care to the clients.

MOH in conjunction with co-operating partners such as JHPIEGO should consider organizing more workshops for nurses on IP practices in order to improve utilization of IPGs in health institutions.

MOH should increase grants to health institutions to enable them purchase the much needed materials and equipment for Infection Prevention and also to enable these institutions to conduct in-house workshops\seminars for nurses on Infection Prevention.

5.5.2 TO UNIVERSITY TEACHING HOSPITAL MANAGEMENT

Senior management should support IP practices by way of purchasing adequate Infection Prevention materials in order to support the utilization of IPGs. The UTH management should organize in-service training for OT and ICU Nurses on IPGs so that they are exposed on the new trends in infection prevention practices.

Management should also carry out random checks on Infection Prevention focal persons in order to monitor how effectively they are disseminating information on IP practices.

5.6 DISSEMINATION OF FINDINGS

To disseminate is to make known the study findings to relevant authorities what the study has measured. Dissemination of findings of the study was done by making five (5) copies which will be distributed to the Department of Nursing Sciences, University of Zambia Medical Library, Ministry of Health, UTH Board of Management and one copy will be kept by the researcher.

The researcher will also take advantage of clinical meetings that take place at University Teaching Hospital involving other surgical departments to bring to light the findings of the study results to all members of the surgical departments.

The researcher will also take advantage of seminars, workshops and conferences such as the annually held Theatre Interest Group Conferences to disseminate the research

findings to this cadre of nurses since they are the ones involved in the critical care of patients hence need to observe IP practices in order to prevent nosocomial infections.

5.7 LIMITATIONS OF THE STUDY

The small sample and the convenient sampling method used in this study limit the generalization of findings to other settings.

Limited funding as well as the time available to collect data could not allow the researcher to conduct a large scale study.

5.8 CONCLUSION

BRIEF SUMMARY OF STEPS TAKEN IN THE STUDY AND GENERALIZATION OF INFERENCES MADE

After the proposal was ready, the researcher obtained permission from The Director of UTH Board of Management before embarking on data collection. Data was collected from fifty (50) Theatre and Intensive Care Nurses during their normal working hours. Respondents were conveniently selected and a written consent was obtained from each respondent before they filled in the questionnaire. Data was sorted out and edited for consistence, completeness, legibility and accuracy. The data was then categorized which by involved identifying and grouping answers that belonged together. After that data was entered manually on a data master sheet. Data was presented using frequency tables and figures for easy analysis. Cross tabulations were also used to show relationships between variables. Calculations were used using a calculator. Finally the findings were discussed. In conclusion, the findings of the study revealed that majority of OT and ICU Nurses have high levels of knowledge of Infection Prevention Guidelines. However the utilization of IPGs was found to be moderate which calls for vigilance and consented efforts by all concerned especially The Infection Prevention Team in monitoring and enhancing IP practices, focal persons in dissemination of information on IPGs and senior management support through purchasing of IP materials and equipment.

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APPENDIX 1

UNIVERSITY OF ZAMBIA

School of Medicine

Department of Nursing Sciences

Questionnaire number _____

SELF ADMINISTERED QUESTIONNAIRE

TITLE:

**KNOWLEDGE AND UTILIZATION OF INFECTION PREVENTION GUIDELINES
BY OPERATING THEATRE AND INTENSIVE CARE UNIT NURSES**

Date _____

Center _____

INSTRUCTIONS

1. Introduce yourself to the respondents
2. Explain the purpose of the interview.
3. Assure the respondents that no names will appear on the questionnaire and that the information will be confidential.
4. For closed ended questions, indicate your answer by a tick in provided.
5. For open ended questions, write your responses in the spaces provided.

SECTION A: DEMOGRAPHIC DATA

For official use

1. Sex: Male ☐ Female ☐ ☐
2. Age last birthday _____
3. Professional Qualification
 1. = Registered Nurse []
 2. = Registered Theatre Nurse []
 3. = Registered Midwife []
 4. = Enrolled Nurse []
 5. = Enrolled Theatre Nurse []
 6. = Enrolled Midwife []
 7. Others (specify) _____☐
4. Number of Years in Service
 1. = 0-1 Year []
 2. = 2-5 Years []☐

- 3. =6-10 Years []
- 4. =11-15 Years []
- 5. =16 Years and above []

5. How many years have you been working in this Department?

- 1. =0-1 Year []
- 2. = 2-3 Years []
- 3. =4-6 Years []
- 4. =7- 10 years []
- 5. =More than 10 Years []

☐

6. Describe the work load in this Unit

- 1. = Very High []
- 2. = High []
- 3. = Moderate []
- 4. = Low []

☐

**SECTION B: KNOWLEDGE OF INFECTION PREVENTION
AND HOSPITAL AQUIRED INFECTIONS**

7. Have you ever heard of Universal Precautions/Infection Prevention Guidelines?

- 1. =Yes []
- 2. =No []

☐

8. If yes, where did you hear about Universal Precautions/Infection Prevention Guidelines?

- 1. =Clinical area []

2. =Nursing school []
3. =Seminars/workshops []
4. =Medical books []
5. =Others specify _____

☐

9. State what you understand by Standard Precautions

☐

10. Universal Precautions Guidelines include the following

(Tick all correct answers)

- 1 =Hand hygiene []
- 2 =Use of protective equipment []
- 3 =Safe and proper waste management []
- 4 =Decontamination and Sterilization or HLD []
- 5 =Bathing everyday []

☐

11. What are nosocomial infections?(Tick all correct answers)

- 1 =An infection due to malpractice by health care provider []
2. =An infection which develops in an in-patient where the
Incubation period is not known []
- 3 =An infection which is neither present nor incubating when
Patient is admitted into hospital []
4. =An infection that the patient comes with from home []
- 6 =Any infection occurring in the patients nose []

☐

12. Tick three (3) Hospital Acquired Infections that you know?

- 1 =Post operative wound infections []
- 2 =Pneumonia []
- 3 =Tuberculosis []
- 4 =Diabetes Mellitus []
- 5 =Cancer []

☐

13. How can you prevent Hospital Acquired Infections?

(Tick all correct answers)

- 1 =Hand hygiene []
- 2 =Sterilization, HID and decontamination of instruments []
- 3 =Use of aseptic technique []
- 4 =Use of post exposure prophylaxis []
- 5. =Avoid eating in the hospital []

☐

14. What is Infection Prevention?

(Tick all correct answers)

- 1 =.Elimination of infection []
- 2 =.Reduction of infection []
- 3 =.Control of infection []
- 4 =.Stop the spread of infection[]
- 5 =To be cured []

☐

s15. What are the advantages of Infection Prevention to your clients?
(Tick all correct answers)

- | | | |
|----|--|-----|
| 1 | =Prevent infection | [] |
| 2 | =Reduces hospital stay | [] |
| 3 | =Increases mortality and morbidity rates | [] |
| 4 | =Increases hospital stay | [] |
| 5. | =Reduces conflicts with staff | [] |

☐

16. What are the advantages of Infection Prevention to the Institution?
(Tick all correct answers)

- | | | |
|----|--|-----|
| 1 | =Reduces on the cost of purchasing medical and surgical supplies | [] |
| 2 | =Helps to decongest the hospital | [] |
| 3 | =Helps improve the quality of care provided | [] |
| 4 | =Helps render the hospital a dangerous working environment | [] |
| 5. | =Makes the hospital tidy | [] |

☐

17. Have you heard of Post Exposure Prophylaxis?

☐

- | | | |
|----|------|-----|
| 1. | =Yes | [] |
| 2. | =No | [] |

If yes to question 17, State what it involves in your own words

☐

18. State the availability of Nursing and Medical care items used for IP Practices

- 1. =Always available []
- 2. =Mostly available []
- 3. =Occasionally available []
- 4. =Never available []

☐

19. Does management monitor knowledge and utilization of IP practices in your Department?

- 1. =Yes []
- 2. =No []

☐

SECTION C: UTILIZATION OF INFECTION PREVENTION GUIDELINES

20. Frequency of hand hygiene

- 1. =Before each patient contact []
- 2. =Before and after each patient contact []
- 3. =After each patient contact []
- 3. =Hand washing not essential before and after []
each patient contact

☐

21. Do you re-use needles/syringes?

- 1. =Yes []
- 2. =No []
- 3. =Give reasons for not re-using _____
Needles and syringes

☐

22. Do you re-use gloves?

1 =Yes []

2 =No []

☐

23. What do you do to the needles and syringes after use?

1. =Decontaminate the needle and syringe three times with 0.5% chlorine
before disposal in puncture proof safety box []

2. =Bend or break needle prior to disposal []

3. =Remove the needle from the syringe after decontamination
And dispose the needle into the sharp box []

4. =Recap needle after use and dispose into the sharp box []

5. =Dispose needle and syringe immediately after use into the
Puncture proof safety box []

☐

24. What do you do to the gloves after use?

1. =decontaminate in 0.5% chlorine for a few minutes before disposal []

2. =remove without decontamination and dispose them immediately []

3 =Clean under running water then decontaminate them []

4 =Clean under running water remove and dispose them []

☐

25. Please describe how you dispose of filled sharp boxes

.....

.....

.....

☐

26. Have you ever had any needle stick injury in the last 12 months?

1. =Yes []

2. =No []

☐

Describe what you did after sustaining the needle stick injury

☐

27. In your own opinion what do you think should be done in order to Improve the utilization of Infection Prevention practices by Theatre and Intensive Care Nurses?

☐

28. Have you attended any seminar/workshop on the utilization of IPGs in your Nursing practice?

1. =Yes []
2. =No []

☐

29. Do you know if Nursing Management displays IPGs at each clinical area (ward)?

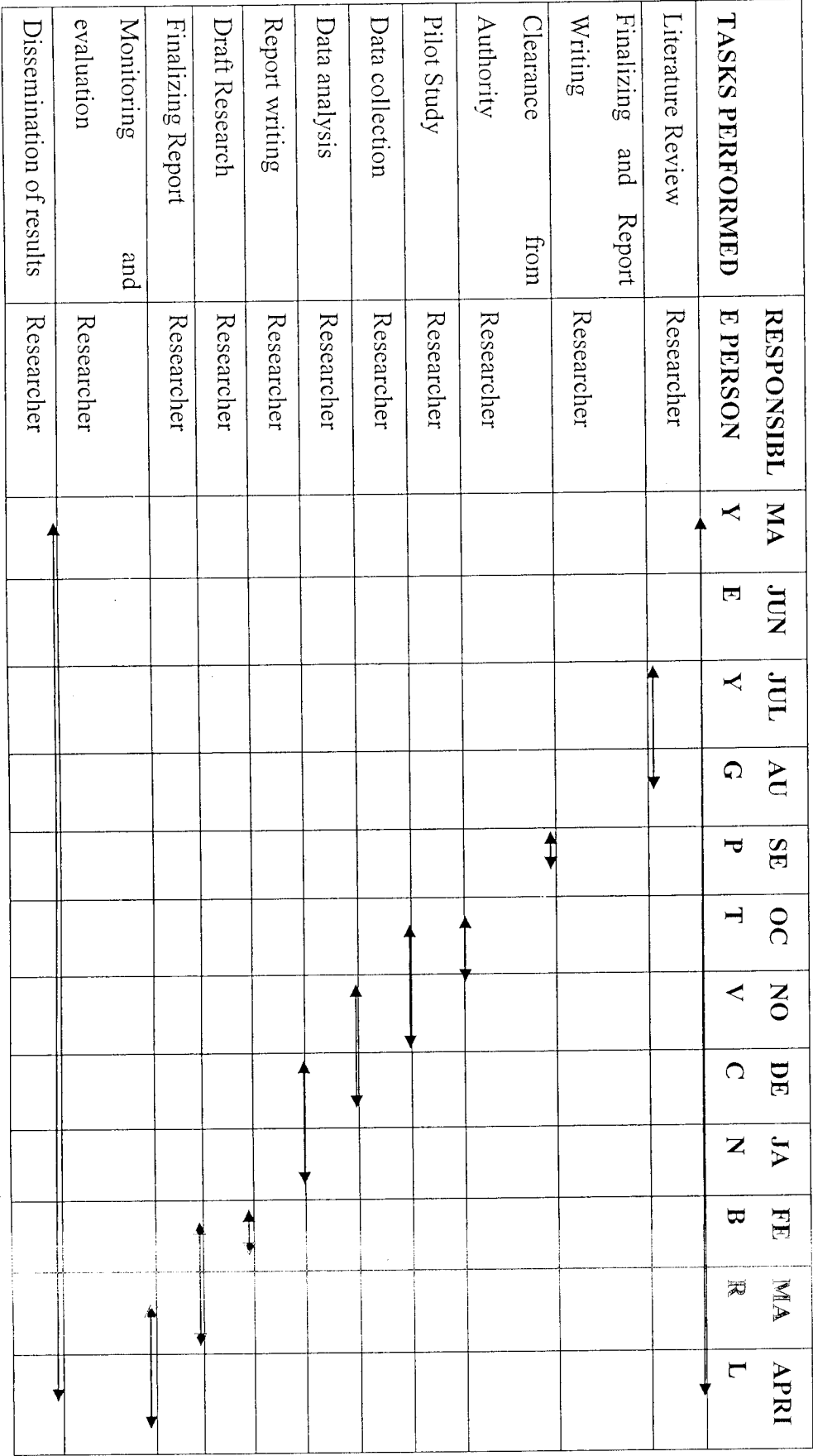
1. =Yes []
2. =No []

☐

APPENDIX 2: WORK PLAN

1	TASKS TO BE PERFORMED	DATE	PERSONNEL	DURATION
2	Literature Review	Continuous	Researcher and supervisor	
3	Finalizing and Report Writing	1st June- Aug 28th 2009	Researcher and supervisor	13 Weeks
4	Clearance from Authority	1st Sept- 18th Sept 2009	Researcher	3 Weeks
5	Pilot Study	5th-7th Oct 2009	Researcher	3 Days
6	Data collection	12th Oct- 6th Nov 2009	Researcher	4 Weeks
7	Data analysis	9th Nov- 4th Dec 2009	Researcher	4 Weeks
8	Report writing	7th Dec- 29th Jan 2009	Researcher and supervisor	8 Weeks
9	Draft Research	1st Feb- 12th Feb 2010	Researcher and supervisor	2 weeks
10	Finalizing Report	15th Feb- 19th Mar 2010	Researcher and supervisor	5 Weeks
11	Monitoring and evaluation	Continuous	Researcher and supervisor	
12	Dissemination of results	22nd Mar- 22nd April 2010	Researcher	

APPENDIX 3 GANT CHART



APPENDIX 4: RESEARCH BUDGET

BUDGET CATEGORY	UNIT	UNIT COST(K)	QTY	TOTAL(K)
Stationery				
(a)Duplicating paper	Realm	35,000	5	175,000.00
(b)Pens	each	1,500.00	5	7,500.00
(c)Pencils	each	500	5	2,500.00
(d)Note books	each	2,000.00	4	8,000.00
(e)Stapler	each	25,000.00	1	25,000.00
(f)Box of staples	Box	5,000.00	1	5,000.00
(g)Scientific calculator	each	90,000.00	1	90,000.00
(h)Folders	each	5,000.00	2	10,000.00
(i)Pencil sharpener	each	5,000.00	2	10,000.00
(j)Tipex	Box	12,000.00	2	24,000.00
Subtotal				357,000.00
Secretaries Services				
(a)Diskettes	each	10,000.00	5	50,000.00
(b)Questionnaire typing	Pages	3,000.00	10	30,000.00
(c)Questionnaire photocopying	Pages	250	50	12,500.00
(e)Research Report Photocopying	Pages	300	500	150,000.00
(f)Typing and binding proposal	each	450	1	450.00
(g)Research Report Typing	Pages	3,000.00	100	300,000.00
(h)Binding Report	each	130,000.00	5	650,000.00
Subtotal				1,755,000.00
Personnel				
Researcher				

(a)Lunch Allowance	Days	55,000.00	30	1,500,000.00
(b)Transport	Days	55,000.00	30	1,500,000.00
Subtotal				3,000,000.00
Others				
Research Bag	each	150,000.00	1	150,000.00
Allowance	each	20,000.00	50	1,000,000.00
Subtotal				1,150,000.00
Total				6,262,000.00
Contingency				626,200.00
Grand Total				6,888,200.00

BUDGET JUSTIFICATION

Stationery

The reams of paper will be used for drafting the research proposal, questionnaire, draft research reports and printing the final reports.

Typing Services

These services will be provided during preparation of the questionnaires to suit the number of respondents needed for the study. Then typing , printing, photocopying and binding the research proposal and then research report with the appendices. The diskettes will be for storage of data. The pens and pencils will be used for writing while the correction fluid and rubber will be used for correcting any mistakes.

Personnel

Lunch allowance will be needed for the researcher to buy food while collecting data. Transport allowance will be required for the research to and from the health facility.

Contingency

The 10% contingency will be used for unseen circumstances and also to cushion the effects of inflation.

APPENDIX
INFORMED CONSENT

Dear participant,

My name is Justina Chembe; I am a student at the University of Zambia School of Medicine in the Department of Nursing Sciences. I am pursuing a Bachelor of Science Degree in Nursing.

In partial fulfillment of degree program, I am required to undertake a research project. My study topic is **"Knowledge and Utilization of Infection Prevention Guidelines by Operating Theatre and ICU Nurses at University Teaching Hospital"**.

You have been conveniently selected to participate in this study and I wish to inform you that participation in this study is voluntary and you are free to withdraw at any stage of the study if you wish to do so. You will be asked some questions about the use of Infection prevention Guidelines. The information you will give me will be kept confidential and no name will be written on the questionnaire.

You will not receive direct benefits from the study or monetary gain but the information that you will provide will help University Teaching Hospital Management and other relevant authorities in the fight against post-operative wound infection.

I (name)onOctober declared that I understand the purpose of this study and I am willing to participate.

Signature/ thumb print of respondent.....

Signature of interviewer.....

University of Zambia
School of Medicine
Department of Nursing Sciences
P.O. Box 110
LUSAKA

8th September, 2009

The Managing Director
U T H Board of management
P/B RW X 15102
LUSAKA

U.F.S: The Head of Department
University of Zambia
School of medicine
Department of Nursing Sciences
P. O. Box 50110
LUSAKA



Chigoma

Dear Sir,

RE: PERMISSION TO CONDUCT PILOT STUDY

I am a fourth year student pursuing a Bachelors Degree in Nursing in the School of Medicine at the University of Zambia. In partial fulfillment of this programme, I have to carry out a Pilot Study before I conduct a major research at the University Teaching Hospital. In this regard, I am therefore, requesting for permission to use D-Block Theatre and Pediatrics Intensive care Unit for my Pilot Study.

My research topic is **"A study to determine the knowledge and utilization of infectious prevention guidelines by Theatre and Intensive care Nurses"**. The target population in this study will be nurses. The respondents will be required to answer the structured questions in the questionnaire during the interview. My sample will cover five Nurses which is 10% of the study population.

Thanking you in advance.

Yours faithfully,

JBulu
Justina Bwalya Chembe

University of Zambia
School of Medicine
Department of Nursing Sciences
P.O. Box 110
LUSAKA

8th September, 2009

The Managing Director
U T H Board of management
P/B RW X 15102
LUSAKA

U.F.S: The Head of Department
University of Zambia
School of medicine
Department of Nursing Sciences
P. O. Box 50110
LUSAKA

[Handwritten signature]

[Handwritten signature: Rugoma]

Dear Sir,

RE: PERMISSION TO CONDUCT A RESEARCH STUDY

I am a fourth year student pursuing a Bachelor Degree of Science degree in the School of Medicine of the University of Zambia. As part of the course requirement, I am supposed to conduct a research study in my area of interest. In this regard, I am therefore, requesting for permission to conduct my study at your Institution.

My research topic is **"A study to determine the knowledge and utilization of infection prevention guidelines by Theatre and Intensive care Nurses at the University Teaching Hospital.**

I intend to conduct this exercise from 12th October to 6th November, 2009

Thanking you in advance.

Yours faithfully,

[Handwritten signature: Justina Bwalya Chembe]
Justina Bwalya Chembe