

**SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA**

**INFECTION PREVENTION AND CONTROL PRACTICES AMONG HEALTH
WORKERS AT RIDGE REGIONAL HOSPITAL**



(10362714)

**THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA,
LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE
AWARD OF MASTER OF PUBLIC HEALTH DEGREE**

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DECLARATION

I hereby declare that with the exception of articles and books which I quoted, cited and duly acknowledged in the references of this project, all information produced is as a result of my own work and diligence in obtaining data. No part of this work has been obtained from a previous publication or accepted for the award of any degree in any University or Institution of higher learning.

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DEDICATION

This work is dedicated to my dear husband, William and two lovely children, Kafui and Edem for their encouragement and support.



ACKNOWLEDGEMENT

I wish to express my profound gratitude to the Almighty God for his unfailing love, care and grace to me throughout this programme.

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I would like to thank my field supervisor, Dr. John K. Yabani. The Accra Metropolitan Director of Health Services as well as all the staff of the Metropolitan Health Directorate for their support and encouragement.

Finally, I thank all my respondents at the Ridge Hospital who willingly agreed to participate in this research. I say God richly bless you.

ABSTRACT

Background

An effective Infection Prevention and Control (IPC) programme is fundamental to quality health care. The purpose of this study is to assess the knowledge of infection prevention, availability and access to materials for infection and compliance with infection prevention guidelines at Ridge Regional Hospital. This facility has staff strength of Eight hundred and seventy-two (872) comprising of doctors, nurses, pharmacists, laboratory technicians and other healthcare workers.

Method

The study was a descriptive case study that employed quantitative approach using self-administered questionnaire and observational guide to collect data. Two hundred and four (204) respondents participated in the research.

Results

At Ridge Hospital knowledge in IPC among Healthcare workers was moderate, 51.0% (N=204). The availability and access to materials for IPC practices at the facility was 58.0% and overall Compliance with IPC Guidelines was 54.9%.

Conclusion

In conclusion, results of this study demonstrate that knowledge of HAIs was moderate among most of healthcare workers sampled. Nonetheless, this calls for a routine training of all health workers on IP. It is recommended that management ensures access to materials and their availability to promote effective compliance.

Key words: Availability, Access, Knowledge, Compliance, Ridge Regional Hospital.

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OPERATIONAL DEFINITION OF TERMS

For the purpose of this study:

Asepsis literally means without microorganisms

Availability refers to the percentage of logistics, materials and supplies for IP that are always supplied and can be collected when requested for.

Compliance refers to going strictly according to lay down rules.

Decontamination is the process that makes in animate objects safer to be handled by healthcare workers.

Hand Hygiene is a general term that applies to routine hand washing, antiseptic hand washing, antiseptis hand rub or surgical hand asepsis.

Health Care Facility includes all categories of hospitals, clinics, health centre, CHPS compounds, and all other health care service delivery points.

Infection Control refers to the process that ensures that micro-organisms remain confined to one area so as not to spread and cause diseases.

Micro-organisms are the causative agents of infections that include bacteria, viruses and fungi

Nosocomial Infection (also called hospital acquired infection) is infection that is not present at the time the patient comes to the health facility.

Protocol refers to laid down rules and acceptable methods used for infection prevention and control practices.

Standard Precaution refers to work practices required for basic level IPC practices and are based on the principle that all blood, body fluids, secretions (except sweat), non-intact skin and mucous membrane may contain transmissible infectious agent.

Sterilization is the destruction of all microorganisms including bacteria spores. This is achieved principally by autoclaving.

LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ERCRIHS	Ethical Review Committee on Research Involving Human Subjects
GAR	Greater Accra Region
GHS	Ghana Health Service
HAIs	Hospital Associated Infections /Healthcare Associated Infections
HCWs	Health care Workers
HIV	Human Immune-deficiency Virus
HRIs	Hospital Related Infections
ICD	Institutional Care Division
IP	Infection Prevention
IPC	Infection Prevention and Control
LMIC	Low and Medium Income Country
MOH	Ministry Of Health
MOPH	Ministry of Public Health
NHIS	National Health Insurance Scheme
PPE	Personal Protective Equipment
SPSS	Statistics Package for Social Science
SSI	Surgical Site Infection
USAID	United State Agency for International Development
W.H.O	World Health Organization
WHA	World Health Assembly

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

An effective Infection Prevention and Control (IPC) programme is fundamental to quality health care. This is because it has the potential benefits of reducing disease burden on patients, health institutions and the nation as a whole (MOH/GHS, 2009). In the last two decades, healthcare associated infections have been recognized as a significant problem in terms of quality of care and cost to patients/clients, healthcare facilities and governments. This is because of the increasing realization of healthcare associated infections as a potential indicator of quality healthcare to patients. (MOH/GHS, 2009). Health care-associated infections have long been recognized as crucial factors affecting the quality and outcomes of health care delivery.

An infection is considered nosocomial if it becomes evident 48 hours or more after hospital admission or within 30 days of discharge following in-patient care (Bello et al 2011). They are caused by *Candida albicans*, *Escherichia coli*, hepatitis virus, herpes zoster virus, *Pseudomonas* and *Staphylococcus* (Mukwato et al, 2003). These pathogens are transmitted from one person to another through direct or indirect contact and at any time, about 10% of in-patients have Hospital Acquired Infections (HAIs) (Mukwato et al, 2003).

Reported cases of nosocomial infection assumed such terrifying proportion in 2002 that WHO member states approved a World Health Assembly (WHA) resolution on patient safety (Bello et al, 2011). Developing countries were reported to have up to 20 times the risk of contracting a nosocomial infection compared with developed countries. Thus, source(s) of the spread of infection is a major worry for managers in healthcare practice

particularly in developing countries where the healthcare system is already overstretched (Bello et al, 2011).

Nosocomial infection rates ranges from 1% in developed countries to more than 40% in some developing countries, including Sub-Sahara Africa. Some of the nosocomial infections in developing countries are surgical site infections (SSI), urinary tract infections and lower respiratory tract infections such as pneumonia (Alvarado, 2009).

These infections are usually resistant to commonly used drugs such as penicillin and they are difficult to eradicate from health care environment. They prolong hospital stays for patients and thus increasing bed occupancy and consequently consuming scarce hospital and patient resources and a major challenge to hospital management.

The strain that these preventable infections put on the health care system include: prolonging patient hospitalization, treatment with expensive drugs and the use of other services such as laboratory tests, X-rays and transfusion, are immeasurable. Yet they can be prevented by the appropriate knowledge and practices of Infection Prevention and Control (Mukwato et al, 2003).

It is possible to significantly reduce the rate of health care associated infections (HAIs) through effective infection prevention and control practices. Similarly, infection prevention and control measures are most effective when Standard Precautions are applied because undiagnosed infections are common (WHO, 2005).

Although infection is most prevalent in patients upon admission, healthcare workers also act as potential vectors for pathogenic agents. Hospitals provide a favorable transmission pathway for the spread of nosocomial infections owing, partly, to poor infection control

practices among health workers on one hand and overcrowding of patients in most clinical settings on the other (Bello et al, 2011).

Healthcare providers and patients are exposed to infection through inadequate IPC practices and it is against this background that MOH developed a policy that every health worker is trained in infection prevention and control practices. The purpose is to reduce health care associated infections, thus promoting good quality care for patients and health personnel (MOH/GHS, 2009).

1.2 Statement of the Problem

The benefit of IPC in good health delivery and achievable patient satisfaction ensures less expenditure on health care in any country. It is a policy that every country scores at least 70% compliance with IPC practices (WHO, 2002). But in Ghana there is no data on compliance level and further a monitoring survey conducted in selected health facilities in the Greater Accra Region (GAR) by Institutional Care Division (ICD) of GHS records a compliance level of 43% and 18% for Ridge Hospital (GHS, 2011). These figures are below the baseline level of 70% and need to be investigated.

This study therefore seeks to assess the IPC practices at the Ridge Hospital to identify factors contributing to this low compliance level.

1.3 Conceptual Framework: Infection Prevention and Control Practices

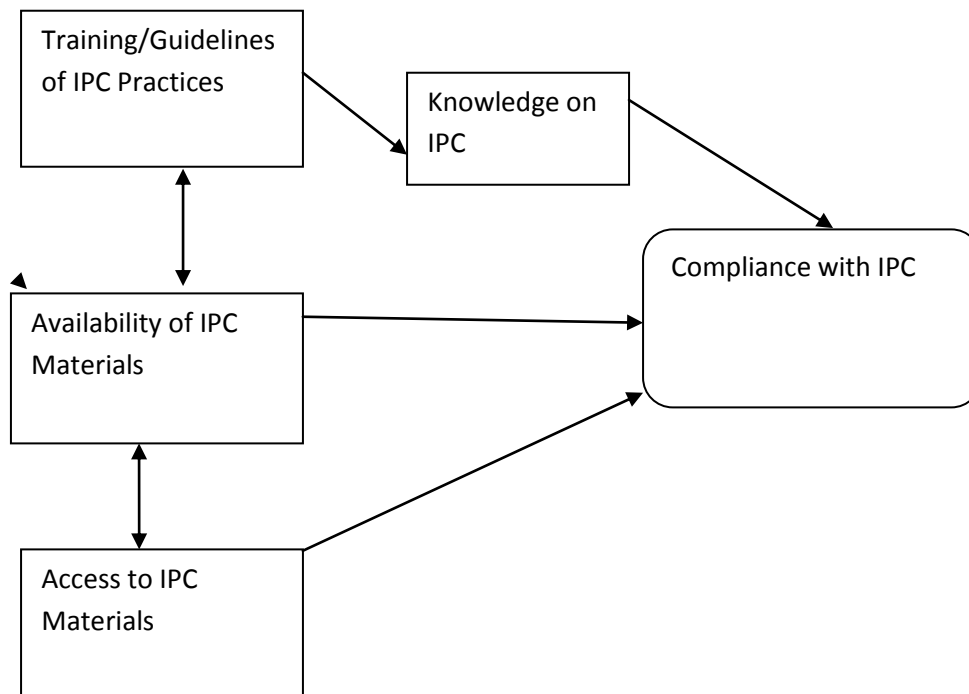


Figure 1: Some factors Associated with Compliance with IPC Practices.

As depicted in (figure 1), compliance with IPC practice depends on knowledge and training of personnel. This coupled with availability and accessibility to materials will ensure the much needed compliance at the health facility. This relationship is explained in the diagram above.

1.4 Justification

An infection Prevention and Control (IPC) practice is the key to health sector policy. The finding of this research will ensure excellent client-centered care and maximize protection against infections for all categories of health staff, patients/clients and communities.

This study seeks to assess the knowledge of infection prevention, availability and access to materials for infection prevention and factors affecting compliance with infection prevention guidelines at the facility. The outcome of this study will help Policy Makers with information on the extent to which non-compliance with IPC practice is prevalent at the Regional Hospital.

1.5 Research Questions

1. What is the level of knowledge of IPC among healthcare workers at the facility?
2. What is/are the system(s) in place to ensure availability and accessibility of materials for IPC Practices?
3. What are the critical factors that affect the compliance with IPC Practices at the facility?

1.6 Objectives of the Study

1.6.1 General Objective

The general objective of the study is to assess Infection Prevention and Control (IPC) Practices at the Ridge Regional Hospital in Accra.

1.6.2 Specific Objectives

The specific objectives of the study are to:

1. Assess the knowledge of Infection Prevention and Control among the health workers.
2. Evaluate the Availability and Access to materials for Infection Prevention at the facility.
3. Evaluate the compliance with Infection Prevention and Control by health workers at the facility.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Infection Prevention and Control (IPC), refers to policies and procedures used to minimize the risk of spreading infections, especially in hospitals and humans or animals, healthcare facilities. (<http://medicaldictionary.thefreedictionary.com>) and are the responsibility of all individual and facilities providing health care. It addresses factors related to the spread of infections within the health-care settings (WHO, 2002).

IPC practices are akin to public health practice, practiced within the confines of a particular health-care delivery system rather than at society level as a whole. It addresses factors related to the spread of infections within the health-care setting and from staff to patient or among staff.

An infection Prevention and Control practice is something we cannot do without if we want to ensure a healthy and safe health delivery services in our country.

This review is organized under a number of headings namely:

- (i) Sources of infection
- (ii) How infection spreads
- (iii) Infection prevention and control

2.2 Sources of Infection in the Hospital

Bacteria and viruses are natural inhabitants of the environment, both in the community and in the hospital. The majority of these organisms is not pathogens and may even have beneficial role to play in human beings (WHO, 2002). The organisms in the natural

environment may provide a reservoir from which they may be passed on to other patients and cause infection. However, there are very many reservoirs, the one from which infections arise is usually called the source (WHO, 2002). Identification of the correct source is essential to arrest the spread of the virus.

The sources of spread can be classified along the same lines as the types of infection. For examples, the spread from community-acquired infection to other patients in the hospital can be through the respiratory tract as in tuberculosis and respiratory viruses, infected blood, as with viral hepatitis and HIV/AIDS. Another example is that patients undergoing hospital treatment become infected. These infections arise from many different sources and are usually associated with operative or other invasive procedures carried out in operating theatres, wards, x-ray departments and clinics. The groups at high risk of acquiring infection due to diminished defenses require additional protection especially, in hospital areas where there are enhanced invasive procedures (WHO, 2002).

2.3 How Infection Spreads

Infection is the invasion and multiplication of micro-organisms in the body tissues. (<http://medicaldictionary.thefreedictionary.com>). The infection process is similar to a circular chain with each link representing one of the factors involved in the process. An infectious disease occurs if each link is present and in proper sequence. These links are: Firstly, causative agents sufficient enough to destroy normal tissue. Secondly, the presence of a reservoir in which the organism can thrive and reproduce for example, body tissue and the humans, animals and insects and contaminated food and water. Further, the chain acts

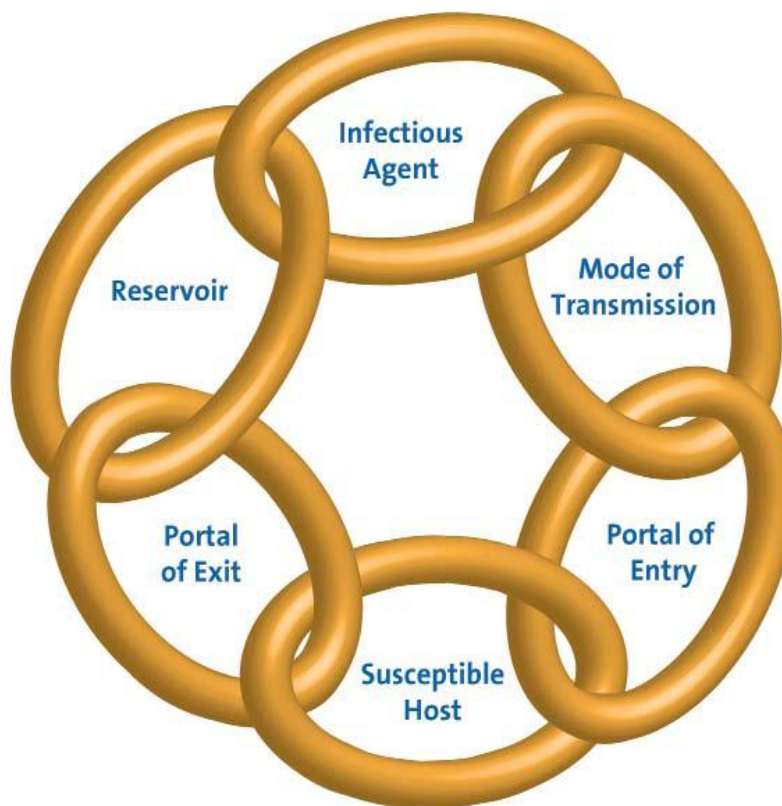
as a portal through which the pathogens can leave the host such as the respiratory and intestinal tracts.

Another mode of transfers, such as the hands, air current, vector fomites or other means by which the pathogens can move from one place or person to another. Open wounds, intestinal and reproductive tract are also means through which the pathogens can enter the body of susceptible host (MOH, 2005).

According to (Burke, JP 2003) germs that cause infection spread in various ways with the main methods being;

- i. Airborne (the germs are carried by the air such as the chicken pox virus).
- (ii). Droplet spread (infectious droplets of moisture are coughed or breathed out during infection). These settle on surface and may be transferred to another person's eyes or mouth usually by their hands.
- (iii) Direct Contact (by touching someone that has the infection, such as scabies.
- (iv) Indirect Contact (by contact with dirty equipment or other materials.

Disease Transmission Chain



By eliminating any of the six links or breaking the chain transmission does not occur¹

Figure 2: Diagram showing the chain of disease Transmission Chain adapted from College of Physiotherapists of Ontario.

The advent of antibiotics and the resultant development of resistant strains of bacterial have introduced new types of pathogens little known or previously thought to be significantly dangerous to man (WHO, 2002).

Due to constant changes in our lifestyles and environments, new diseases are constantly appearing that people are susceptible to, making protection from the threat of infectious disease urgent. Many new contagious diseases have been identified in recent past years such as AIDS, Ebola and Hantavirus (WHO, 2002). The overuse of antibiotics has made

many bacteria develop a resistance to common antibiotics. This means that newer antibiotics must continually be developed in order to treat and contain infections in health care settings, because agents and host factors are more difficult to control, interruption of transfers of microorganisms is directed at transmission (Saini, Singh, Singh & Jainis, 2011).

2.4 Infection Prevention and Control

Infection control is an essential component of care and one which has too often been undervalued in recent years. It is an essential but often under-recognized and under-supported part of the infrastructure of healthcare (en.wikipedia.org/wiki/infection).

Infection prevention and control is a key component of practice for all healthcare professionals, not only for their health, but also to reduce nosocomial infections, thus improving patient safety (MOH, 2005)

Infection control addresses factors related to the spread of infections within the healthcare setting whether patient to patient, patient to staff, staff to patient or among staff, including prevention (via hand hygiene, cleaning/disinfection/sterilization, vaccination, monitoring/investigation) of demonstrated suspected spread of infection within a particular healthcare environment.

Research has demonstrated that up to one third of hospital acquired infection can be prevented with high intensity of Hospital Acquired Surveillance and Control Programme (MOH, 2005).

It may seem ironic that, the place where you go to be healed can make you sick. Hospitals are havens for infection-causing bugs, but by following a few practical tips, you can have a

healthier hospital stay (Dove .L.L, Mann, M.P, 2006). The healthcare workers themselves can spread infection if they are not vigilant about washing of their hands and changing gloves every time they move from patient to another. Hospital infection can also be the result of contaminated ventilation or water system.

2.5 Knowledge of Infection Prevention

All healthcare workers (e.g. nurses, physicians, housekeepers and cleaners) need to know why infection prevention is important. Knowledge of clinical infection control practices is continually growing and changing. While the principles of infection control (prevention, transmission and control) do not change, though specific clinical practices may evolve as a result of new evidence (MOH, 2009). Knowledge on disease transmission cycle, use of routes of infection and how to break the cycle, use of Standard Precaution when dealing with all patients and methods of minimizing disease transmission. For example, hand hygiene, gloves and other personal protective equipment as well as hands-on demonstration presented as follows:

- Hand washing and using a waterless, alcohol-based antiseptic hand rub.
- Cleaning up a blood or body fluid spill.
- Giving an injection and disposing of sharps
- Learning to suture with blunt-tipped needles

To have long-term effects, the initial training should be followed up and monitoring should be targeted toward indentifying and solving specific problems related to introducing the new process. Also producing general reminders, regarding the importance of maintaining

an infection-free environment for safe delivery of services should be repeatedly emphasized (Tietjen et al, 2003).

2.6 Availability and Access to Materials for Infection Prevention Practice

Availability of Infection Prevention (IP) materials has been cited as important determinants of compliance with IPC practices. A study conducted in Zambia revealed that inadequate supply of gloves in southern province-based health facilities led to the spread of infection among women during vaginal examinations (Mukwato et al, 2003). In another study conducted at the same hospital, it was reported that general hygienic measures taken to reduce the risk of HIV infection were insufficient and that many inadequacies stemmed from the lack of supplies (Mukwato et al, 2003).

Limited resources represent the main challenge for healthcare workers in Low and Medium Income Countries (LMIC) where healthcare frequently is far behind. Even in countries where the healthcare budget is given high priority, the proportion devoted to prevention of Hospital-related infections (HRIs) is usually insufficient (Rak, 2010). A study conducted in some LMIC in South America, South East- Europe and in the former Soviet Union revealed that there is an increase in infection prevention and control activities as a result of the increase in the budget for IPC programmers (Rak, 2010).

Prompt access to materials for IP practices is crucial to effective and successful IPC practices in developing countries where infection rate is high (Mukwato et al, 2003). Therefore, one way to promote IPC practices in hospitals must provide sufficient resources to support the programme.

2.7 Compliance with IPC Guidelines and Protocol

Successful programmes for preventing the spread of infectious diseases in healthcare facilities are based on understanding the scope of the problem, prioritizing activities and effectively using available resources are invariably limited, careful planning, implementing and monitoring activities on a regular basis, whether in a small clinic or a busy district hospital are all essential (Tietjen et al., 2003).

The risk of patients and healthcare workers acquiring HAIs could significantly be reduced if hospital management makes infection control a high priority (Rak, 2010). Administrative controls are among the most important steps in prevention and control of HAIs. Therefore administrative support and commitment is essential in the effectiveness of all other measures (Rak, 2010). Hospital authorities must understand that without the proper resources, hospitals can be high risk areas. Therefore healthcare authorities must establish and support a comprehensive, effective national objective and develop strategies, guidelines and policies for specific infection control issues which are regularly updated (Rak, 2010).

Implementing IPC programmes in low- and middle income countries is frequently hampered by financial constraints, inadequate logistics/materials, limited laboratory capacity and inadequate staff training in areas such as hand hygiene, handling and disposal of clinical waste, handling and disposal of sharps, decontamination and sterilization of used instruments and quality improvement. Therefore a systematic approach to detect deficiencies in infection control practices and to implement effective and affordable solution is urgently needed (USAID, 2006).

Another factor that has been associated with compliance is incorporation of IP Guidelines in health care workers' curricular and in-service training on IP Protocol and Guidelines (MOH, 2007).

CHAPTER THREE

3.0 METHODS

3.1 Study Design

The study is a descriptive case study that employed quantitative approach using self-administered questionnaire and observational guide to collect data. Two hundred and four (204) respondents participated in the study.

3.2 Study Area

The study was conducted at Ridge Regional Hospital in the Greater Accra Region (Figure 2). Ridge Hospital is the Regional Hospital of Greater Accra Region located in the Ridge residential area of the Osu Klottey Sub-Metro. It was established in 1919 and was formerly referred to as 'European Hospital', built exclusively for the European colonial community during the Gold Coast era.

It shares boundaries with West Africa Examinations Council to the north, to the West, Kanda Highways; East, Sixth Avenue, and to the South, Osu Castle Road. Ridge Hospital, being the regional hospital has an In-Service Training Unit that trains most of its staff on IPC practices.

The hospital is a 348-bed regional teaching and referral centre in the Greater Accra Region providing general and specialized services for the population in the city and surrounding areas. In 2011, the hospital had about 1,064 admissions, 2,382 outpatient visits. The patient average length of stay is eight (8) days. The hospital occupancy rate is about 80% at any given time. It has staff strength of 872 comprising doctors, nurses, laboratory technicians,

pharmacists and other healthcare workers. The hospital was chosen for the study because it is the regional hospital and serves as the referral points for other health facilities within the region and also for its low compliance in IPC practices (GHS, 2011).

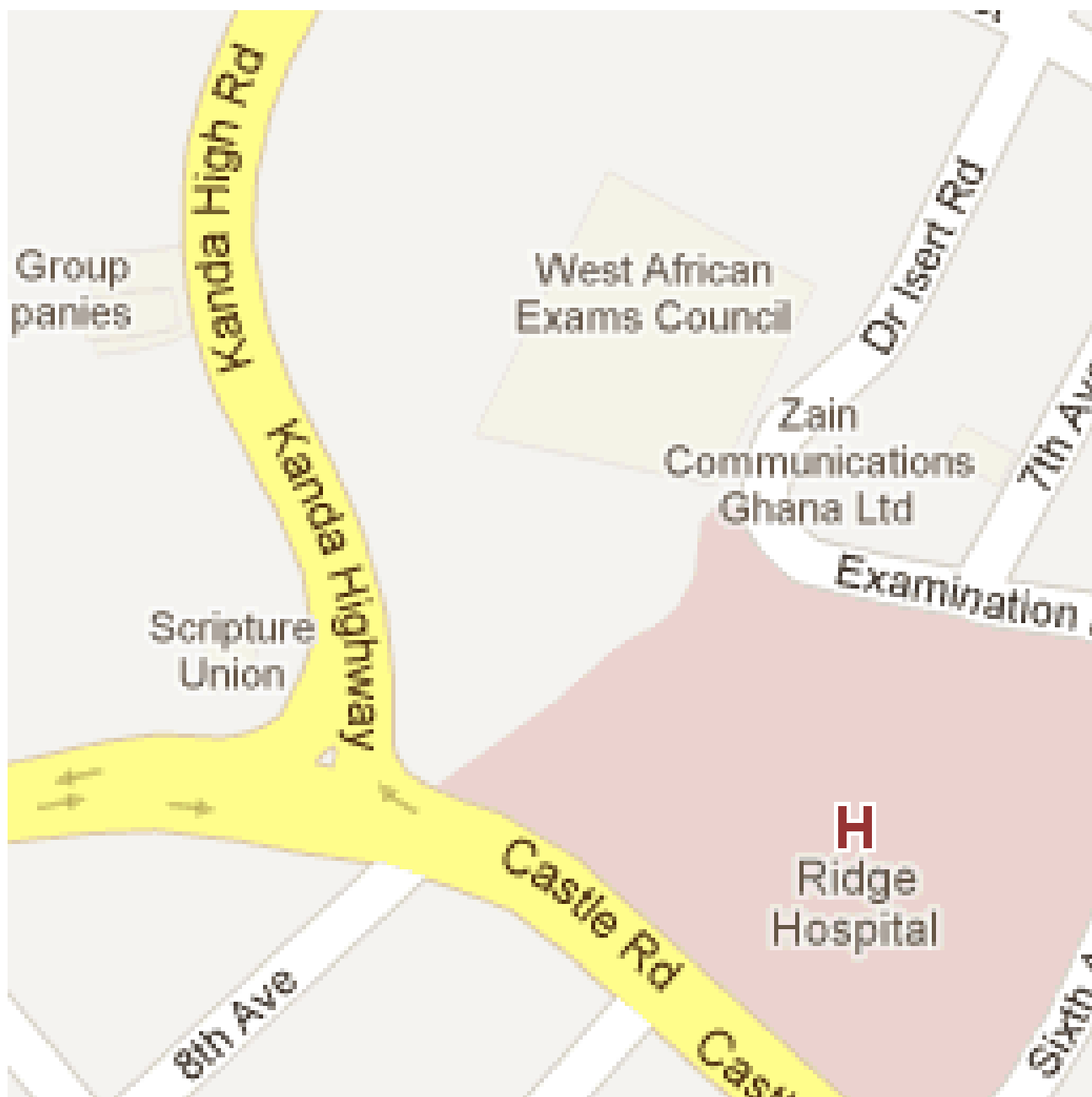


Figure 3: Map Showing Ridge Hospital, the study location.

3.3 Study Population

The study population includes all healthcare workers at the Ridge Regional Hospital.

3.4 Unit of Analysis

The unit of analysis was an individual worker at the facility.

3.5 Sampling Method

Due to limited time within which the study was carried out and the shift system run by the staff of the hospital, convenience sampling technique was employed to enable the researcher obtain a reasonable sample size for the study.

3.6 Data Collection Techniques

All data were collected by the principal researcher. Self-administered questionnaire were used to collect data from the staff of the facility.

Observational guides were also used to assess the IPC practices among health workers at the facility.

3.7 Study Variables

In this study, the dependent variable was compliance with IPC practices by the health workers at the facility. The independent variables were the knowledge of IPC, availability and access to materials for IPC.

3.8 Quality Control

To ensure accuracy, the self-administered questionnaire was edited by my supervisor. This is to ensure consistency. Two (2) interviewers with adequate knowledge in IPC practices, policy and protocol were recruited and trained on the use of standard checklists, data collection and field procedures.

The standard observational guide for the assessment and the self-administered questionnaire for the collection of data were pre-tested at La General Hospital. This was done to test respondents understanding of the questionnaire and also increase validity and reliability of the result.

3.9 Data processing And Analysis

The data that were returned were coded before being entered into SPSS version 17.0

Data was analyzed using SPSS Version 17.0. The distribution and the internal consistencies of the responses were checked. Incomplete responses were not included in the analysis.

3.10 Ethical Consideration/Issues

The research proposal was submitted to Ghana Health Service (GHS) Ethical Committee on Research Involving Human Subjects (ERCRIHS) for ethical clearance before the study was carried out. Approval was also sought from Ridge Hospital Administration to use their data and staff for the study.

3.11 Limitation

The convenient sampling method for this study could introduce some biases in the research, for example participants, who would not participate, may have relevant IP practices that may not be captured in the results. It was possible that, the staff could alter their behaviour from their normal practices during ward observations. However, the findings of this research could be generalized in to the study population.

CHAPTER FOUR

4.0 RESULT

4.1 Introduction

This chapter focuses on the analysis and the interpretation of the results. The results are presented in the following order: Socio-Demographic characteristics of the respondents, knowledge in IPC practices among Health workers, availability and access to materials for IPC practices and compliance with IPC Guidelines and protocol.

4.2 Demographic Characteristics of the Study Population

A total of 204 respondents were included in this analysis as presented in Table 1. The ages of the study population ranged from 20-51 years with 31-40 years having the highest percentage of 46.1%. Majority, 68.1% had NTC as their highest educational level. The largest professional (95.1%) group that participated in the study was nurses. The junior staff formed the majority with 56.4%. The majority 80.4% spent between 1-5 years in their current positions and 78.4% spent less than 5 years working at the facility.

Table 1: Socio-Demographic Characteristics of Respondents (N=204)

Characteristics	Frequency	Percentage (%)
Sex		
Male	58	28.4
Female	146	71.4
Age(years)		
20-29	88	43.1
30-39	94	46.1
40-49+	22	10.8
Educational Level		
University	57	27.9
Polytechnic	8	4.0
NTC	139	68.1
Professional Group		
Nursing	194	95.1
Paramedical	10	4.9
Rank/Position		
Senior Staff	89	43.6
Junior Staff	115	56.4
Years spent in current position		
1-5	164	80.4
6-10+	40	19.6
No. of years in the facility		
Less than 5	160	78.4
6-10	38	18.6
10+	6	2.9

4.3 Knowledge of Infection Prevention Practices among Health workers

The majority (70.6%) of respondents indicated that they have heard about IPC and 51.0% had training in IPC practices. The commonest mode of transmission was Hospital Acquired Infection (HAI) was contact with blood and body fluids, 39.2% of the respondents, while 12.7% indicated needle pricks. Hand washing 41.2% was a means of preventing HAI while processing of instrument was 13.7%. The overall level of knowledge on IPC was as follows: the majority (51%) had some knowledge, followed by (29.4%) who had low knowledge and (19.6%) had high knowledge.

Table 2: Knowledge of Infection Prevention Practices among Health workers

Variables	Frequency	Percent (%)
Heard of Infection Prevention Control (IPC)		
Yes	144	70.6
No	60	29.4
Training in IPC		
Yes	104	51.0
No	100	49.0
Mode of transmission of Hospital Acquired Infection (HAI)		
Contact with blood	80	39.2
Needle stick	26	12.7
Contaminated instruments	64	31.4
Contaminated hands	34	16.7
Prevention of HAI		
Hand washing	84	41.2
Use of PPE	60	29.4
Proper disposal of clinical waste	32	15.7
Proper processing of instrument	28	13.7
Level of knowledge on I P		
High	40	19.6
Medium	104	51.0
Low	60	29.4
Total	204	100.0

4.4 Availability and Access to Materials

About 87.7% of the respondents indicated that, gloves were always available on the ward and 12.3% indicated gloves were not always available on the ward for IPC practices. About the availability of PPE, 70.6% of participants stated that PPE were not always available while (29.4%) stated PPE were always available for IPC practices. With regards to hand washing items, (58.3%) indicated that the items were not always available and (41.7%) stated that the items were available. Majority, (57.4%) of the respondents indicated that, detergents were always available for decontamination while (42.6%) stated that detergents were not available.

With access to material for IP, majority 58.8% of the respondents indicated they do not have easy access to gloves while 12.2% indicated gloves were easily accessible. About 70.6% of the respondents mentioned that, access to Personal Protective Equipment, PPE was not easy and (29.4%) stated access to PPE was easy. Hand washing items, (65.7%) stated the items were easily accessible while (34.3%) were not easily accessible. Accessibility to detergent for decontamination, (72.1%) indicated that detergents were easily accessible while (27.9%) stated detergents were not easily accessible. With safety boxes, (51.0%) indicated the boxes were easily accessible and (49.0%) stated the boxes were not easily accessible as presented in Table 3.

Table 3: Availability and Access of Materials for IPC (N=204)

Variables	Number	Percentage (%)
Availability of materials for IP		
Gloves		
Always available	179	87.7
Not always available	25	12.3
Personal Protective Equipment (PPE)		
Always available	60	29.4
Not always available	144	70.6
Hand Washing Items		
Always available	85	41.7
Not always available	119	58.3
Detergents for Decontamination		
Always available	117	57.4
Not always available	87	42.6
Safety Boxes		
Always available	58	28.4
Not always available	146	71.6
Access to materials for IP		
Gloves		
Easily accessible	84	41.2
Not easily accessible	120	58.8
Personal Protective Equipment		
Easily accessible	54	26.5
Not easily accessible	150	73.5
Hand Washing Items		
Easily accessible	134	65.7
Not always accessible	70	34.3
Detergents for Decontamination		
Easily accessible	147	72.1
Not easily accessible	57	27.9
Safety Boxes		
Easily accessible	104	51.0
Not easily accessible	100	49.0

4.5 Compliance with IPC Guidelines and Protocol

On the existence of IPC committee and nurse, 49.0% indicated that they were not aware of the committee or nurse with only 11.8% stated that there was a committee and nurse. With access to IPC guideline and protocol at the workplace, 57.8% stated that they had no access to the guideline with (42.2%) indicated they had access to the guideline. On the frequency of hand washing, 76.5% stated they wash their hands, before and after contact with patients with only 1.0% stated that they rarely washed their hands. Majority indicated they have been using PPE while performing various procedures. The commonest used PPE were gloves with 82.4% while the least used were boots with 2.9%.

On the disposal of used syringes and needles, 57.4% put, used syringes and needles immediately into safety boxes with, 42.6% put them into receivers before pouring them into safety boxes. The overall level of compliance with IPC guidelines and protocol, 54.9% had low compliance level with (45.1%) had high level of compliance. This is presented in Table 4.

Table 4: Compliance with IPC Guidelines

Variables	Frequency	Percentages (%)
IPC Committee/Nurse		
Yes	24	11.8
No	80	39.2
Not aware	100	49.0
Access to IPC Guidelines		
Yes	86	42.2
No	118	57.8
Hand Washing		
All the time	156	76.5
Some time	48	23.5
Use of PPE		
Gloves	168	82.4
Gowns	30	14.7
Boots	6	2.9
Disposal of used syringes and needles		
Into safety boxes	117	57.4
Into a receiver	87	42.6
Level of Compliance		
High	92	45.1
Low	112	54.9
Total	204	100.0

CHAPTER FIVE

5.0 DISCUSSIONS

5.1 Introduction

This chapter discusses the findings of the research as related to the objectives. Also, it provides information relevant for strengthening IPC at the facility; assess knowledge, availability and access to materials for IPC practices and compliance with IPC guidelines and protocol at the facility to ensure delivery of quality care to patients. They are presented as follows:

5.2 Knowledge of Infection Prevention and Control (IPC) Practices among Health Workers

This research reveals knowledge about infection prevention practices among health workers. Awareness of IPC and knowledge of its practices among the participants were moderate 51.0 %. This proportion was relatively low compared with that obtained in a study by Mukwato et al, 2005 in which 63.6% of sampled healthcare workers had training in IPC. This disparity in the outcome may be due to low access to training in IPC. Also, the study location might have influenced the difference in the outcome of the two studies. Nevertheless, the highest reference made to training in IPC which is WHO's requirement was suggestive to a more theoretical approach to campaign about infection prevention practices (WHO, 2005).

Although there were different levels of knowledge on Hospital Acquired Infections (HAIs) among different ranks of the staff, it was not impressive as the highest score was 39.2%.

Further, the knowledge of the staff on prevention of HAIs did not show any statistical relationship between training in IPC and knowledge in prevention of HAI

5.3 Availability and Access to Material for Infection Prevention and Control (IPC) Practices

Non availability and access to materials for IPC practices is known to be one of the barriers to IPC practices (Mukwato et al, 2003). The most available materials for IPC practices on the ward were gloves 87.7%. Although gloves were mostly available on the wards, they are not easily accessible to work with. This disparity may be due to the fact that some ward sisters do not want to issue enough of the materials at a time for the staff to use with the excuse that the nurses are misusing the gloves. This was also observed during the ward observation as some wards were borrowing gloves from other departments to use when their ward in charges were not available.

However, the most accessible material was the detergent for decontamination 72.1%. There is disparity between the availability of the detergents and their correct use. Most wards do not have the protocol for preparing the detergent pasted at where the decontaminants are placed and because of this most staff are not conversant with the correct strength of the detergent they use on the ward. This situation can affect decontamination of used instruments which can be a source of spreading of infection.

5.4 Compliance with Infection Prevention and Control (IPC) Guidelines and Protocol

Compliance with IPC practices is based on the access to guidelines and protocol (Rak, 2010). Access to IPC guidelines by the healthcare workers was as low as 42.2%. This may explain the low compliance with IPC practices among healthcare workers. The highest complied practice was hand washing 76.5%. This finding is contrary to that of (Tiejien, 2003) who mentioned a lower compliance among nurses in his research.

Complying with the proper disposal of syringes and needles into safety boxes was 57.4%. This was lower than similar survey carried out by Mukwato et al, 2005 where compliance with proper disposal of syringes and needles was 62.3%. This was observed in some wards where improvised containers were used for needles and sharps.

The majority of respondents 82.4% used gloves as a Personal Protective Equipment (PPE) while performing various procedures. This is in compliance with what was obtained by (Tietjen, 2003.)

The research sought to assess the relationship between training, the availability and access to materials for IPC practices and compliance with regards IPC. The findings of the study revealed that compliance varied across different departments of the hospital. Observable compliance was high in departments such as Operating Theatre where supplies of materials for IP were adequate compared to the Medical Ward where supplies were inadequate. About 90% of the participants observed in the Operating Theatre (conducting or assisting an operation) complied with IPC guidelines. However at the Medical and Surgical Wards respondents did not comply with IPC guidelines.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The following conclusion can be made about infection prevention and control practices among Healthcare workers at Ridge Regional Hospital. The study showed low levels of knowledge in IPC practices due to lack of information on IPC. However, it was found that availability, access to materials for IPC practices and compliance with IPC guidelines were moderate.

6.2 Recommendations

Following the findings of the study, the following actions are recommended:

1. Training in IP should be made part of routine training of all health workers at the facility. This would improve the knowledge of all the staff in IPC practices which will lead to delivery of quality care to patients. Policy makers must also provide enough information on IPC available to the health workers.
2. The management of the facility should ensure access to materials and their availability for workers to use for their work. There should also be strict policy at the facility for all care givers to mandatorily comply with existing guidelines and protocol.
3. The IPC Committee and the Nurse should be actively functional and assume their monitory and supervisory roles.

It is hoped that when the above recommendations are put in place, compliance with IPC practices will improve to meet the standard recommended by WHO.

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APPENDICES

Appendix I: Informed Consent Form

Project Title: Assessment of Infection Prevention and Control Practices: A study at Ridge Regional Hospital in Accra.

School/Institution: Department of Health Policy, Planning and Management, School of Public Health, College of Health Sciences, University of Ghana

Background:

My name is Pauline Awusi Hayeh, a student from the School of Public Health, University of Ghana. I am conducting a study on the compliance with IPC practices among health workers at the Ridge Hospital. The objectives of the study are to assess the knowledge of IPC among workers at the facility, availability and access to materials for IPC and compliance with IPC guidelines at the facility.

Procedures

The study will involve answering questions from a three (3) page questionnaire about the IPC practices and performance, observation by the researchers.

There will not be coercion to obtain response from participants. It will be appreciated if you could participate in this study. This is purely academic research which forms part of my work for the award of a Master Degree in Public Health.

Risk and Benefits

The procedures involved in this study are non-invasive and will not cause any discomfort to the participants. The results of the study will be used by the hospital to improve IPC practices.

Right to Refuse

Participation in this study is voluntary and you can choose not to answer any individual question or all the questions. You are at liberty to withdraw from the study at anytime. However, I will encourage you to fully participate in the study since your opinions are important to help to assess the compliance with IPC practices at the facility.

Anonymity and Confidentiality

You are assured that information on the questionnaires is strictly confidential and information submitted would not be shared with anybody who is not part of the study team.

Dissemination of Results

The results of this study will be sent to the hospital.

Before taking Consent

Do you have any question you would like to ask about the study? Yes [] No []

(If yes, please, indicate the questions below)-----

If you have questions later, please contact Pauline Awusi Hayeh on Tel 0244485472.

Consent

I....., declare that the purpose, procedures as well as risks and benefits of the study have been explained to me in English language and I have understood. I hereby agreed to take part in the study.

Signature of Participant_____ Date_____/_____/_____

Interviewer's Statement

I, the undersigned, have explained this consent to the subject in English language that s/he understands the purpose of the study, procedures to be followed as well as the risks and benefits of the study

The participant has fully agreed to participate in the study.

Signature of Interviewer_____ Date_____/_____/_____

Address_____.

It is purely an academic research which forms part of my work for the award of a Master of Public Health Degree. We are pleased to invite you to be part of the study. We would be very happy if you could read this consent so that you may decide if you wish to be part of this study.

Accepting to take part in this study will take about 30 minutes of your time to answer some questions. You are allowed to stop, skip answering any questions that you are not comfortable with. Any information given would be treated strictly as confidential.

The information you provide will contribute to knowledge and help the facility support the IPC practices that would help improve on quality of care to patients. If you have any questions, please you may contact me on Telephone Number: 0244485472.

Respondent's Consent

I have read all the necessary information that I need to know concerning this study and have fully understood it. I have decided on my own accord without any coercion to take part in this study.

Signature of Respondent-----Date-----/-----/-----

Appendix: II

Appendix II: Assessment Tool

Infection Prevention and Control Compliance Assessment

Thank you for agreeing to participate in this survey.

We are interested in finding out whether you have been complying with IPC practices after scores of trainings organized at the facility. We would also like to find out any barriers/challenges that might affect your compliance with the practices. The purpose of this survey is to assess the compliance of IPC practices by the workers at the facility to assist policy makers in health sector so your cooperation is needed. This survey is completely anonymous – so you need not indicate your name. This interview would take no longer than 30 minutes. Thank you for your time, we appreciate your participation.

Instruction: Tick where appropriate and answer the necessary question where require

Interview Date.....

Section I: Personal Background

Section I: Personal Data

1. Sex

A. Male

B. Female

2. Age (Tick).....

A. 20-30 yrs

B. 31-40yrs

C. 41-50yrs

3. What is your highest level of education/training?
- A. University
 - B. Polytechnic
 - C. Training College
 - D. Secondary
4. Which of the professional group do you belong to?
- A. Medical
 - B. Nursing
 - C. Paramedical
5. What is your current rank? -----
6. How long are you in your current position?
- A.1-5yrs
 - B. 6-10yrs
 - C. 11-20yrs
7. How long have you been working at this facility? -----
8. What are the primary tasks that you perform at work?
- A. Clinical care
 - B. Disease Control
 - C. RCH

Section II: Knowledge of IP among Health Workers.

We are also interested in knowing what you know about Infection Prevention and Control.

9. Have you heard about infection prevention before?

A. Yes

B. No

10. Have ever had any training in infection perfection and control?

A. Yes

B. No

11. Please can you indicate the mode of transmission of hospital acquired infection (HAI)

A. Through contact with blood and body fluids

B. By needle prick

C. By the use of contaminated instruments

D. By contaminated hands

12. How can HAI be prevented?

A. Proper hand washing

B. Use of Personal Protective Equipment (PPE)

C. Proper disposal of clinical wastes

D. Proper processing of used instruments

13. What IPC practices do you know? _____

Section III: Availability and Access to Materials for Infection Prevention and Control

A. Availability of Material for IPC Practices

14. What are the items and materials you need for IPC? _____

15. How available are gloves on the ward?

A. Always available

B. Not always available

16. Do you always have these PPE for use on the ward for use?

A. Always available

B. Not always available

17. Do you always have the items available for hand washing?

A. Always available

B. Not always available

18. How available are detergents for decontamination of used instruments

A. Always available

B. Not always available

19. Are safety boxes available for disposal of used syringes and needles?

A. Always available

B. Not always available

Accessibility to Materials for IPC Practices

20. How are the following items for IPC practices are accessible on the wards

Gloves

A. Easily available

B. Not easily accessible

21. Personal Protective Equipment

- A. Easily accessible
- B. Not easily accessible

22. Hand washing items

- A. Easily accessible
- B. Not easily accessible

23. Detergent for decontamination

- A. Easily accessible
- B. Not easily accessible

24. Detergents for decontamination

- A. Easily accessible
- B. Not easily accessible

25. Safety Boxes

- A. Easily accessible
- B. Not easily accessible

Section IV: Compliance with IPC Guidelines and Protocol

26. Are you aware of IPC committee and nurse at the hospital

- A. Yes
- B. No

27. Do you have access to IPC Guideline at the workplace?

- A. Yes
- B. No

28. How often do you wash your hands at work?
29. What is the barriers to appropriate hand washing?
30. How used syringes, needles and sharps are disposed?
31. How do you dispose of the waste generated at the hospital?

Appendix III: PART II OF ASSESSMENT TOOL**Observation Guidelines**

I am interested in observing some of the IPC practices in your department. I will be looking at your logistics, documentation and performances.

Logistics	Yes	No	Observations/Comments
Logistics (check for availability and quantity of the following)			
Chlorine or bleach (check concentration)			
Sterile surgical gloves			
Single use exam gloves (examination gloves)			
Heavy duty (utility gloves)			
Safety boxes			
Safety boxes in areas where injections are given			
Presence of over flowing safety boxes			
Pierced or open safety boxes			

Performance	Yes	No	Observations/Comments
Presence of sharps around procedure area e.g. exposed needles			
Veronica buckets and whether they are in use			
Decontamination buckets with lids			
Single use hand towels			
Container for clean and used towels with lids			
Types of soap used for hand washing			
Availability of perforated soap dish			
Display of protocol for preparation of chlorine/bleach			
How wastes are handled and disposed			
Check for general environmental cleanliness			