ENSIGN COLLEGE OF PUBLIC HEALTH, KPONG EASTERN REGION, GHANA

EVALUATION OF HEPATITIS SURVEILLACE SYSTEM AND

RELATED HEALTHWORKER KNOWLEDGE, ATTITUDE AND

PRACTICES IN THE GREATER ACCRA METROPOLIS

by

Christine Ahiale

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DEDICATION

This dissertation is dedicated to My Lord Jesus Christ and to the improvement of

Hepatitis program in Ghana.

DECLARATION

I hereby certify that except for reference to other people work, which I have duly cited, this Project submitted to the Department of Community Health, Ensign College of Public Health, Kpong is the result of my own investigation, and has not been presented for any other degree elsewhere.

Christine Ahiale (ID -157100039)   _____   _____

 (Student)   Signature   Date

(Certified by)

Dr. Juliana Yartey Enos   _____   _____

(Supervisor)   Signature   Date

(Certified by)

Dr Stephen Manortey   _____   _____

(Ag. Head of Academic Programme)   Signature   Date

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ABBREVIATIONS/ACCRONYMS

HAV – Hepatitis A Virus

HBV – Hepatitis B Virus

HCV – Hepatitis C Virus

HIV – Human Immune Virus

HIV/AIDS – Human Immune Virus / Acquired Immune Deficiency Syndrome

IDSR – Integrated Disease Surveillance and Response

WHO – World Health Organization

GHS – Ghana Health Service

KAPs – Knowledge, Attitude and Practices

HCWs – Health Care Workers

MOH – Ministry of Health

PHC – Primary Health Care

NHIS – National Health Insurance Scheme

STDs – Sexually Transmitted Diseases

CDC – Centre of Disease Control

ADS - Auto-disposable Syringes

IFNa – Interferon –Alpha

DSN – Disease Surveillance and Notification

HMIS – Health Management Information System

STIs – Sexually Transmitted Infections

SARS – Severe Acute Respiratory Syndrome

IHR – International Health Regulations

EMRs – Electronic Medical Records

HC – Health Care

IDSR – Integrated Disease Surveillance Response

HCFs – Health Care Facilities

ABSTRACT

Hepatitis is an infectious disease which is public health importance in Ghana. Hepatitis Surveillance systems is the main pillar of public health practice and decision making. The objective of disease surveillance systems is to ensure effective monitoring and control. Studies have been conducted on viral hepatitis surveillance system but not much is written on KAP. This study was conducted to assess completeness, timeliness and sensitivity, as well as the knowledge, attitudes, practices of health workers on the hepatitis surveillance system.

A cross sectional study and review of 8 Government health facilities' records between January 2015 and December 2016was carried out using purposive sampling technique to assess the completeness, timeliness and sensitivity of the hepatitis surveillance system. Seventy-six health workers involved in the Integrated Disease Surveillance System were interviewed using a structured questionnaire to assess their knowledge, attitudes and practices in relation to the hepatitis surveillance system. Data on socio-demographic characteristics of health workers were also collected. Data was analysed using descriptive and bivariate analysis.

The data obtained from the hepatitis surveillance system was found to be incomplete, and reporting of data was not timely. In general, the documentation of the surveillance system was poor, and the sensitivity was rather low.

Respondent's knowledge on monthly surveillance reporting, signs and symptoms of viral hepatitis, and hepatitis prevention through vaccination is 92.11% (70), 75% (57), and 84.21% (64) respectively.

On respondents' attitude of hepatitis surveillance, 22.37% (17) agree the surveillance system is too burdensome, 72.37% (55) do not agree that all viral hepatitis cases are captured by the surveillance system, and 92.11% (70) agree that IDRS is really necessary.

On respondents' practices of the surveillance system, 84.21% (64) actively search for viral hepatitis cases at the health facilities.

Health care workers need in-service training on the surveillance system to imbibe in them the importance of accurate data recording, routine analysis and timely communication and dissemination of results for decision making, policy and programs review.

Contents

CHAPTER ONE

INTRODUCTION

1.1   Background to the Study

Viral hepatitis is caused by infection with any of at least five distinct viruses: hepatitis A virus (HAV), hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis D virus (HDV), and hepatitis E virus (HEV). These viruses cause significant morbidity and mortality affecting more people worldwide than even HIV (Lemoine, Eholié, & Lacombe, 2015). Consequently, viral hepatitis remains a silent epidemic worldwide. Nearly 2 billion people across the world are estimated to be infected with Hepatitis B Virus with nearly a quarter of these having chronic infection (Lok, 2002; Schweitzer, Hor, Mikolajczyk, Krause, & Ott, 2015). Each year, over half a million hepatitis-related deaths is recorded across the globe (Goldstein, 2005).

The actual burden of hepatitis in Africa is not known but it is estimated that 70–95 % of the adult population show evidence of past exposure to hepatitis infection and the HBsAgseroprevalence rate has been estimated to be around 6–20 % (Ott et al, 2012).

In Ghana, hepatitis is considered to be of significant public health importance and a disease that requires greater attention (Owusu-Ansah, 2014; Mkandawire, Richmond, Dixon, Luginaah & Tobias, 2013).

Ghana has been grouped as part of the areas of the world where the prevalence of chronic Hepatitis infection is high (≥8 %) (Averhoff, 2015). Sweitzer et al. for instance in estimating the global burden of viral hepatitis in 2013, put the prevalence of chronic hepatitis virus infection in Ghana at 12.92% (Schweitzer et al, 2015).Viral hepatitis in Ghana is most commonly caused by hepatitis A virus (HAV), hepatitis B virus (HBV), and hepatitis C virus (HCV).

Hepatitis is the cause of disability and death of around 500 million people chronically infected by HBV and HCV (Blankson et al., 2005). The prevalence rate of HBV in West Africa is 8%; and that for HCV carriers in Africa varies from 0.5% to 10%, even though it may exceed 20% in some cases (Blankson et al., 2005).Several surveillance studies have been done on HCV and HBV infections in Ghana (Gerretti et al, 2010; Sagoe et al, 2012) and the infection rate is 15% among the adult population (NACP, 2010).

Viral hepatitis surveillance is part of the Integrated Disease Surveillance and Response (IDSR) which came into operation in Ghana over a decade ago. IDSR co-ordinates and streamlines all surveillance activities of priority diseases to ensure timely provision of surveillance data for disease prevention and control by linking community, health facility, district, regional and national levels (WHO, 2010).

Although a lot of studies have been conducted on public health surveillance, there is limited information on the attributes of hepatitis surveillance particularly on the sensitivity, completeness and timeliness of the surveillance system in Ghana. In 2009, Ghana Health

Service released a report with figures suggesting an increase in the prevalence ratio from 8:1 in 2005 to 6:1 in 2009 (GHS, 2009). This means one out of every sixth person is infected with the disease. Despite these facts, awareness of viral hepatitis remains very low in the general public and among at risk populations. Even among health care providers, there seems to be a lack of knowledge and awareness about these infections. Thus, this study will seek to evaluate the viral hepatitis surveillance system to determine its completeness, timeliness and sensitivity, as well as the knowledge, attitudes, and practices of health workers involved in hepatitis surveillance in Greater Accra Metropolis.

Ghana's Health Care System

Ghana has a well-organized health care system and a well-structured administrative system since independence even though the country is still grappling with problems of accessibility and unavailability of trained personnel. The general coverage of health services in Ghana is estimated to be around 70% of the population where access to health facility on the average is around 16 km within reach with half of the population living within a 5 km radius (Van den Boom et al., 2004)

Modern health services are generally provided by the central government through the Ministry of Health, local authorities, Christian Missions (private nonprofit agencies), and relatively small number of profit-making private practitioners. The medical system is directly under the control of the Ministry of Health which also has over sight responsibility over dangerous drugs control, narcotics, scientific research and the professional qualification of medical personnel in the field. Regional and district health matters are taken care of by the medical superintendents of that particular region or district. The most recent

of these policies was the successful nationwide implementation of the National Health Insurance Scheme (NHIS) coupled with the free delivery services rendered to pregnant women since 2005.

Modern health services are generally provided by the central government through the ministry of health, local authorities, Christian Missions (private nonprofit agencies), and relatively small number of profit making private practitioners. The medical system is directly under the control of the ministry of health which also has over sight responsibility over dangerous drugs control, narcotics, scientific research and the professional qualification of medical personnel in the field. Regional and district health matters are taken care of by the medical superintendents of that particular region or district. The implementations of major health policies were some of the pragmatic measures taken by Ghana to improve the health needs of the citizenry. The year 1989 saw a massive expansion and construction of additional health facilities in order to extend primary health care services to about 60% of rural communities (MOH, 1989). The primary health care (PHC) concept therefore came with the recruitment and training of village health workers, community health workers and traditional birth attendants for the propagation of health promotion and education messages.

Ghana is facing challenges in both human resource and infrastructural development in the health sector. The problem of health professional's unavailability is attributed to the brain drain syndrome that is very prominent in Sub-Saharan Africa. A study conducted in 2002 revealed that about 60% of all doctors trained in Ghana left the country in the 1980s and that 200 of them left the country in 2002 (Sagoe et al., 2002). Another study showed that in 2003, of the 5880 African health and medical professionals that were granted work permit

in the United Kingdom, 850 were from Ghana (House of Commons, Hansard, 2005). In 2003, 166 medical doctors, 3 dentists, 26 medical assistants, 583 professional nurses and 449 auxiliary nurses emigrated from Ghana (Sagoe et al., 2002).The national estimated doctor population according to 2009 Ghana Health Service report stood at 2033 with a national doctor to patient ratio of 11,929:1 and that of nurses stood at 24,974 with an estimated national nurse to patient ratio of 971:1 (GHS, 2009).

1.3   Research Questions

1.   What is the performance of the Ghana hepatitis surveillance system in terms of completeness, timeliness of reporting and sensitivity of the system?

2.   What are the knowledge, attitudes, and practices of health workersof the hepatitis surveillance system

1.4   Objectives

General objective: to assess the performance of hepatitis surveillance system and to determine the knowledge, attitudes and practices of health workers in viral hepatitis surveillance in selected health facilities in the Greater Accra Metropolis.

Specific Objectives

1.   Assess the performance of the hepatitis surveillance system in terms of completeness, timeliness of reporting, and sensitivity of the system

2.   Assess the knowledge of health workers on hepatitis surveillance

3.   To assess the attitude of health workers involved in hepatitis surveillance

4.   To describe practices of health workers involved in hepatitis surveillance

CHAPTER TWO

LITERATURE REVIEW

2.0   Introduction

This chapter deals with concepts, definitions, theories and empirical study on the completeness, timeliness and sensitivity of the surveillance system as well as the knowledge, attitudes and practices (KAPs) of Health Care Workers (HCWs) on hepatitis surveillance in Ghana.

2.1   Major Diseases in Ghana

Ghana, like any other country in Sub-Saharan Africa, is burdened with a lot of infectious diseases. According to the WHO, the most common diseases in Ghana include, cholera, typhoid, pulmonary, anthrax, pertusis, tetanus, chicken pox, measles, infectious hepatitis, trachoma, malaria, schistosomiasis and yellow fever. Malaria tops the list of all morbidity and hospital outpatient department attendance in the country according to the Ghana Health Service report for 2009 with a national hospital attendance of 5,270,108 between the periods of 2001-2009 (GHS, 2009). The report also ranked the top ten causes of death in Ghana to include malaria, HIV/AIDS related, anemia, cerebrovascular accidents, pneumonia, septicemia, hypertension related deaths, cardiac diseases, meningitis and diarrheal diseases. The WHO report for the same period indicated that about 70% of all deaths that occur among under- five years children in Ghana are infections induced and compounded by malnutrition especially in the rural communities. The ability to recognize a particular public health problem and its acceptance by the health systems is a peculiar

problem in most African countries and Ghana is no exception. In the case of Ghana chronic disease prevention and education have been relegated to the background for two major reasons. First, there is dormant assumption among medical experts and lay people that chronic diseases are rare and preserve of the developed world and does not pose any threat to developing countries.

Also Ghana's health sector is not only structured for the treatment of acute communicable diseases like HIV/AIDS, malaria, Tuberculosis, Swine Flu (H1N1) among others but also faced with inadequate financial support which prevents the sector to improve effective surveillance by establishing strong system of data collection,

Training and retraining of health workers in the surveillance systemchronic diseases treatments, though neglected, have a long history in Ghana. For example, cancer of the liver was discovered in the country in 1817 among the Akan communities while sickle cell was also detected in 1866 (Addae, 1996). A hospital-based study in Korle-Bu Hospital, the premier teaching hospital in the country, showed a steady increase in stroke and cardiovascular diseases incidence between the 1920s and 1960s (Pobee, 2006).

Further studies conducted by the Ghana diabetes association in the southern sector also suggested a prevalence rate between 2% and 3% in urban areas. It is worth mentioning that Ghana is not only neglecting the treatment of chronic diseases, but is also engaged in selective prevention of the infectious diseases with hepatitis as one of the neglected infectious diseases yet to attract the attention of both policy makers and health experts.

Hepatitis Viral Epidemiology

The epidemiology of hepatitis in Africa is scanty, however, based on the sparse data available it is estimated, that of the 360 million chronic global carriers of viral hepatitis, about 65 million of these chronic carriers live in Africa (WHO, 2004) and records 250,000 deaths annually from Africa (Kew, 1992). A total of 51,052 suspected acute viral hepatitis cases with 108 deaths (CFR 0.2%) were reported from 9 out of the regions in Ghana. No report was received from northern region. Out of these suspected cases, 7,581 were confirmed positive; however the various types of Viral Hepatitis were not specified (according to GHS 2014 annual report).

Unpublished data on causes of deaths in Ghana's premier hospital, Korle-Bu Teaching Hospital, over a 20 year period (1980-2000) from the Department of Pathology revealed that the commonest cause of liver diseases leading to death at autopsy in Ghana was cirrhosis of the liver. Although statistics from the Ghana Health Service mentioned liver cirrhosis as the major cause of all liver related deaths in Ghana, there have been very few studies of the possible role of hepatitis and other possible risk factors that account for the deadly epidemic in the country. This is a clear manifestation that viral hepatitis related causes of liver cirrhosis are relegated to the background with very little documentation on it. In view of the above mentioned factors and forces facilitating the spread of the disease globally and in Ghana, being knowledgeable about the facts of the disease and health workers having positive attitudes and behaviors are paramount to the fight against the spread of hepatitis.

The exact viral hepatitis prevalence in Ghana is not known as different studies targeted different segments of the population and does not give a clear picture of the situation on

the ground. Meanwhile, few studies conducted in the country about HBV revealed its continuous increase.

A prevalence rate form a hospital based study at Accra Ghana revealed 6.4% to 10% among blood donors, 6.4% among pregnant women and 16% for children among the general population (Foli et al, 1971; Acquaye et al, 1991, 1994; Martinson et al, 1998 cited in Chireh, 2011 p. 10). In a cross-sectional study in rural Ashanti-Akim North district HBV prevalence was at 5.4% among children aged 15 years and below (Martinson et al., 1998 cited in Chireh, 2011 p. 10) whilst a hospital-based survey of pregnant women in Accra was estimated at 2.5% (Lassey et al., 2004). Prisoners have also been found to be part of the high risk groups for hepatitis prevalence in Ghana. Adjei et.al. (2006) performed a cross-sectional study of prison inmates in two regional central prisons in Ghana and found an HBV prevalence of 19%.The congested nature of most prisons in the country coupled with the fact that prison inmates are not usually screened before serving their prison sentence exposes them to hepatitis infection.

Viral Hepatitis Epidemiology in Ghana

Viral hepatitis is considered to be significant contributors to morbidity and mortality in Ghana and deserve greater attention (Hepatitis Foundation of Ghana). However, extensive aggregate data on prevalence of Hepatitis in Ghana are currently lacking (Ampofo W, Nii-Trebi N). Lavanchy [1] reported a national Hepatitis prevalence rate of 1.7 % for Ghana in 2010 based on WHO's data. A systematic review focusing on

Hepatitis seroprevalence in Africa by (Riou et al) also reported an Hepatitis prevalence rate for Ghana within the range 0.2–9.4 %.

To inform evidence-based policymaking, public health research and programming prioritization in Ghana, accurate prevalence estimates based on thorough and up-to-date evidence compilation is essentially needed.

Mode of Transmission of Viral Hepatitis

Grob and Esteban (1995) cited in Chireh (2011 p. 4) stated that viral hepatitis may be transmitted horizontally and vertically. Horizontal transmission occurs during adolescence or childhood, throughout sexual exposure, needle stick (both accidental or through intravenous drug use), and blood transfusion (Alter et al., 1990 cited in Chireh, 2011 p. 4). Therefore, any person with a bad history of sexually transmitted diseases (STDs), multiple sexual partners or an injecting drug user stands a higher chance of being infected with HBV (CDC, 2002).

Exposure to blood is also by means of open wounds in households and other close contacts and multiple transfusions in hemophiliacs (Meheus, 1995 cited in Chireh, 2011 p. 4). This view of exposure to risk was also shared by (Margolis et al, 2000) who argued that most of the infections occur among adolescents and young adults due to exposure to high risk activities they engage in at this stage of life.

A vertical transmission occurs when an infected mother transmits the virus directly to the neonatal during child birth. Such transmissions are usually possible when the expectant mother suffers an acute infection of hepatitis during pregnancy or if she is a chronic carrier

during that period. The mode of this vertical transmission is not clear cut, but indications are that, infection might occur through a placenta cutting during childbirth.

Majority of countries in Southeast Asia, the Western Pacific and Africa have high endemicity of hepatitis. In these settings the major mode of hepatitis transmission has been identified as vertical, whereby mothers directly transmit virus to their infants during prenatal periods or where infected siblings, playmates, other members of different households transmit the virus to their younger ones (Maynard et al, 1988 cited in Chireh, 2011 p. 4). A cross-sectional study by Margolis et al (1991) cited in Chireh (2011 p. 4) clarified that without prophylaxis, an estimated number of 6000 infants born to carrier mothers each year in the USA would develop chronic viral hepatitis infection as a consequence of prenatal transmission.

In other words the mode of transmission of viral hepatitis according to Hu, Bower and Ward (2010) can be through exposures to blood, from mother to child at the time of birth, through injection-drug use, and through sexual contact. Outbreaks may occur in residential care and health settings however transmissions are very high globally at health-care facilities due to poor and unsafe infection control (Thompson, Perz, Moorman & Holmberg, 2009).

However, in terms of HCV, mode of transmission can be through blood contact, persons who inject drugs (IOM, 2010; Hu et al., 2010; CDC, 1985; Kim, 2009), unsafe injection practices at health-care facilities (Thomson et al., 2009), from mother to child at the time of birth, and infrequently through sexual contact with an infected partner (Hu et al., 2010).

In contrast, HAV and HEV are spread by fecal-oral route, from person-to-person contact and through exposure to contaminated food and food products (McMahon, Alward & Hall et al., 1985; Wasley, Fiore & Bell, 2006). The burden of the disease is HEV is the leading cause of viral hepatitis in south and central Asia, sub-Saharan Africa, and the Middle East (Agarwal & Naik, 2009). The HDV on the other hand may affect persons with HBV (Hu et al., 2010, Peters, 2009).

Against this back drop, the modes of transmission are numerous however, but can be avoided through caution. Viral hepatitis per se does not have a permanent treatment therefore the surest antidote to the global epidemic is prevention.

2.5   Prevention and treatment of Viral Hepatitis

Even though viral hepatitis has become a major source of health concern worldwide, it is important to note that it is the only STD that can be prevented by vaccination (CDC, 2002).The prevention of viral hepatitis globally has become one of the topmost priorities of major political actors and decision makers in global health in recent years. The disease can be prevented by the use of safe and effective vaccine which became available in 1982 through funding and implementation of hepatitis immunization programs. Measures for viral hepatitis prevention have been geared towards avoidance of unsafe blood exposure or blocking of transmission before the advent of the vaccine.

Unsafe blood transfusion has been a major force in the transmission of hepatitis globally (Wang &Wong, 1960). The enactment of a law for the donation and management of blood in blood banks across the world has aggressively fought this channel of hepatitis virus transmission. This notwithstanding, current researches have showed that blood transfusion

is regaining its position as one of the major risk factors for HBV transmission globally. This finding is attributed to the presence of occult HBV infection (OHBVI) among blood donors (Shang et al, 2007). It is also worth mentioning that the global acceptance of the auto-disposable syringes (ADS) has considerably reduced the incidence of HBV infections that occur due to unsafe injections.

Factors contributing to viral hepatitis

Unsafe injection is reported to contribute to 30% of all HBV infections, 28% of HCC and 24% of liver cirrhosis worldwide. In low income countries unsafe injections contribute to 8-16 million cases of HBV (Kermode, 2004). This puts the HCWs and their patients at unnecessary risk of hepatitis infection. For example in eight low income countries it was estimated that 25-96% of outpatient visits resulted in at least one injection, and in five out of these 8 low income countries, 70-90% of the injections were deemed unnecessary (Kermode, 2004).Unnecessary or over use of injections is influenced by popular socio-cultural perceptions of injections and some economic factors. Some patients believe that if injections are not provided during consultation the treatment is not effective and will seek treatment elsewhere (Kermode, 2004). HCWs according to Kermode (2004) succumb to such pressures from patients to be injected. This has increased the problems of needle and syringe re-use, recapping and bending of needles after use, and unsafe disposal contributing to unsafe injections at the work place attributed to poor knowledge, negative attitudes and practices by the HCWs (Kermode, 2004).

There have also been speculations that dental care operations which are capable of causing oral mucous membrane injuries is becoming a major route to hepatitis virus transmission if steps are not taken to prevent it (Zhang et al., 2008).

Treatment

The two main classes of treatment are: antiviral which suppress or destroy HBV by interfering with viral replication (Mahoney, 1999) and the immune modulators that help the human immune system to mount a defense against the virus (Africa, 2009).

Temporary treatment of the disease is therefore aimed at suppressing viral replication, reducing the risk of progressing to advanced liver disease or inflammation of the liver and the development of complications such as liver failure or liver cancer. Chronic hepatitis is therefore easily managed rather than treated.

From the perspective of drugs, there has not been any universal agreement on drugs used for the temporary treatment of the viral hepatitis in the world even though two therapeutic agents such asinterferon-alpha (IFNa) and lamivudine are currently used by many countries for the treatment of the disease. Interferon-alpha is a potent cytokine with antiviral and immuno modulating actions which is produced in response to viral infection (Sen & Ransohoff, 1993 cited in Chireh (2011 p. 5). These are common drug treatments (Mayo Clinic, 2006).

Some of the general management strategies for hepatitis recommended by medical experts include (Chireh, 2011):

i. Avoidance of the following: heavy alcohol consumption; unprotected sexual intercourse with partners who are not vaccinated; sharing of needles or other items that potentially contain blood such as shavers or toothbrushes; and donation of blood or organs

ii. Screening of family members and sexual partners for viral hepatitis infection and vaccination of those who are sero-negative. Thus screening of blood donors, and methods for the preparation of plasma-derived products which render HBV to be ineffective.

iii. Patient education and long-term follow-up with regular testing of liver biochemistry and surveillance of hepatocellular carcinoma in high risk groups

iv. Ensure safe injection, , right way to collect and dispose of injection needles and syringes by HCWs (Kermode, 2005; Mahfouz, 2009; Miller, 1999; Simonsen, 1999)

v. In terms of universal precautions, there are four basic elements which have to be implemented in all health care settings: (1) body fluids should be handled with the same precautions as blood; (2) avoidance or limiting the use of sharp objects; (3) avoidance of skin or mucous membrane contamination; and/or (4) cleaning/ disinfecting/ sterilising (Barker et al, 1999 cited in Africa, 2009 p. 12).

2.6 Hepatitis Surveillance

Disease surveillance is an epidemiological practice by which the spread of disease is monitored in order to establish patterns of progression. The main role of disease surveillance is to predict, observe, and minimize the harm caused by outbreak, epidemic, and pandemic situations, as well as increase knowledge about which factors contribute to such circumstances. Epidemiology surveillance information is accessed from physicians and /or laboratory reports that help to detect and control outbreaks and also guide and evaluate public health interventions (Savage et al., 2016). Hence it involves the notification of a disease within a given period of time.

Disease notification is a process of reporting the occurrence of disease or other health-related conditions to appropriate and designated authorities (Whitehead M, William, 2000). Disease surveillance and notification (DSN) is part of the Health Management Information System (HMIS) which comprises databases, personnel, and materials that are organized to collect data which are utilized for informed decision making (Olumide, 1997 cited in (Nnebue, Onwasigwe, Adogu, & Onyeonoro, 2012 p. 4).

Notifiable diseases are diseases that, by statutory requirements, must be reported to the public health-care authority in the pertinent jurisdiction when the diagnosis is made (Last, 2001). Such diseases are deemed to be of sufficient importance to public health care to require that their occurrence be reported to authorities (National Integrated Disease Surveillance and Response News of the Public Health Department of Ministry of Health, 2002).

The epidemic-prone diseases are recorded weekly, in addition to the monthly report. They include: Cholera, measles, cerebrospinal meningitis, yellow fever, and so on. Also included are the diseases targeted for eradication and elimination such as poliomyelitis, dracunculiasis, neonatal tetanus, leprosy lymphatic filariasis, and other diseases of public health importance like pneumonia and diarrhoea in under-fives, bloody diarrhoea, HIV/AIDS, tuberculosis, onchocerciasis, malaria, pertussis, hepatitis, plague, and sexually transmitted infections (STIs)(National Integrated Disease Surveillance and Response News of the Public Health Department of Ministry of Health, 2002). With the epidemiological transition, non-communicable diseases such as diabetes mellitus and hypertension, tropical diseases like buruli ulcer, emerging infectious diseases such as human influenza of the H5N1 subtype and severe acute respiratory syndrome (SARS), and other diseases under the International Health Regulation (IHR)(National Integrated Disease Surveillance and Response News of the Public Health Department Federal Ministry of Health, 2002).

The health-care facility which could be public or private is the first level for the generation of health-care facility-based data, and it also receives records from community-based health-care workers serving within its catchment area. The health-care facility staff collects data at this level, fills, and sends the forms on a weekly or monthly basis or immediately depending on the condition of disease or health care. These results are sent to the Local Government Primary Health Care Department (Monitoring and Evaluation Unit), which collates data from various health-care facilities in the locality and sends these to the State Ministry of Health (Epidemiology Unit). These data are analysed before transmission to

Ministry of Health (Epidemiology and Planning Research and Statistics Unit) for national collation, analysis, records, and action (Nnebue et al., 2012).

Surveillance data enable national, state, and local public health professionals to measure and monitor trends in the burden of disease, detect epidemics, identify and address health disparities, guide and evaluate public health programs and policies, and monitor changes in health-care practices (IOM, 2010; Hu et al., 2010). There are various sources of viral-hepatitis–related data that help provide insight into current disease prevalence and incidence at the state and local levels. Also CDCs supplement data obtained through case reporting by conducting surveillance surveys on populations with behavioral risk for viral hepatitis. Since most people living with viral hepatitis are unaware that they are infected, employing active surveillance and serologic surveys targeting priority populations would provide more accurate estimates of the burden of hepatitis B and C. However, viral hepatitis surveillance can be improved automated surveillance systems can be linked to electronic medical records (EMRs), which incorporate essential information regarding patient demographics; test results; clinical conditions; and the prevention, care, and treatment services rendered by health-care providers (CDC, 1996).

2.7 Performance of Surveillance System

Public health surveillance is a function of the public health system used to avert epidemics (Holland, 2002; Stachenko, 2008; Canadian Institute of Health Research, 2003). Like earlier stated, it is involves data collection, analysis and interpretation, and the timely dissemination of findings (Chambers, Ehrlich, Connor, Edwards & Hockin, 2006).

Research on performance of surveillance system by Nsubuga et al. (n.d.) cited from Jamison, Breman, Measham et al. (2006 p. 997) have indicated that a rising number of top managers in ministries of health and finance in developing countries and donor agencies are recognizing that data from effective surveillance systems are useful for targeting resources and evaluating programs.

According to Nsubuga et al. (n.d.), surveillance performance assessment provides baseline data to measure progress; to identify and build consensus on the national priority communicable diseases; to identify surveillance gaps of the selected priority diseases; to document the strengths, weaknesses, and opportunities of the existing systems; and to make appropriate recommendations.

There various types of surveillance system depending on expected institutional outcomes. However the most common one is the syndromic surveillance, laboratory surveillance, and web-based surveillance systems (Koutsonanos, 2014) used to monitor and register the appearance of signs and symptoms among the general population, record laboratory results and clinical diagnosis, but also monitor social behaviors and social events in order to indicators of public health interest and potential health risks (Berkelman & Buehler, 1990; Choi, 2012; Morse, 2012; Wojcik, Brownstein, Chunara, & Johansson, 2014). In terms of performance, the approaches used under the syndromic surveillance provides accurate disease identification trends and decision making; protects and saves millions of lives and reduce financial loss associated with disease hospitalization, outpatient visits, life-years loss and the overall disease burden (Katz, May, Baker, & Test, 2011; O'Connell, Zhang, Leguen, Llau, & Rico, 2010).On the other hand, the laboratory surveillance which is based

on laboratory confirmation and reporting of laboratory results (Hu et al., 2012; Johnson, Williams, Lee, & Bradley, 2014; McElwain, 2010; Niesters et al., 2013; Vogt, 1996).It monitors, evaluates the impact of control measures and prevention programs against pathogens of interest. Laboratory surveillance was able to detect Salmonella infections in the throughout the 1980s and early 1990s in the UK and North America. However, surveillance can be ineffective if cases are underreported for a variety of reasons such as delayed diagnosis, inconvenience and lack of motivation to report (Weber, 2007).It can improve health outcomes and prevent disease complications.

These differences notwithstanding, there are two ways of measuring performance surveillance system – quantitative and qualitative measures. The quantitative attributes are sensitivity; positive predictive value (PPV); representativeness; and timeliness. In contrast, the qualitative attributes are simplicity; flexibility; acceptability and stability (CDC, 2001). Out these attributes, this study looks at completeness, timeliness and sensitivity. Calba et al. (2013) categorized the surveillance system performance attributes into system functional; value; evidence quality; data quality; management process; technical and inclusion attributes. Thus the information researchers are searching for with regards to the effectiveness of the performance of surveillance system informs their decision on which category attributes to select for the study (Hoinville, 2012; Drewe et al., 2013; Hendrikx et al., 2011; German et al., 2001; Buehler et al., 2004; Meynard et al 2008; Drewe et al 2011).

2.8   Knowledge of Health Workers on Viral Hepatitis Surveillance

Human knowledge is mostly acquired through communication and its processes. Knowledge is the key to prevention and treatment, and education is the key to knowledge.

However, knowledge about the deadly disease in Ghana is low. According to Chireh (2011), this lack of knowledge or awareness is not only limited to viral hepatitis but also their overall surveillance system.

There are a lot of factors impeding efforts put up by established institutions like WHO and other world organizations to curb the menace of viral hepatitis globally. Notable among these is the lack of knowledge and awareness among health care providers, social service professionals, members of the public including adolescents, and even policy makers. For example, although there has been a safe and effective vaccine for vital hepatitis over the past 20years, universal vaccination is still lacking in many countries. One of the major obstacles identified for this drawback is the lack of commitment to public health/preventive medicine and vaccines.

Afihene, Duduyemi, Tetteh, and Khatib (2015) state that though the knowledge of Ghanaian health care workers on modes of transmission and prevention of hepatitis is adequate, their knowledge on viral HBV is generally poor and unsatisfactory, especially about certain aspects of the disease such as its fatality and non-faeco oral transmission routes.

This according to Goncalves and Goncalves (2013) exposes the lack of knowledge and inadequate attitudes and practices in the diagnosis and prevention of the disease among HC professionals. This is a major challenge for the hepatitis surveillance in that HCWs in

Brazil are not monitoring the disease at the consultation and diagnosis levels in order to keep the right records to inform disease control.

Another empirical study using a descriptive cross-sectional survey of HCWs to examine the awareness and knowledge of health-care workers about DSN and availability of facility records in Anambra State of Nigeria revealed that 89.8% of the health-care workers were aware of the DSN system, only 33.3, 31.1, and 33.7% of them knew the specific uses of forms IDSR 001, IDSR 002, and IDSR 003 (IDSR: Integrated Diseases Surveillance and Response), respectively. Knowledge of use of the various forms at the facility and local government area (LGA) levels were generally low, although the observational checklist revealed that IDSR 001 and IDSR 002 forms were predominantly found in primary health-care facilities. Thus the finding shows lack of knowledge of in reporting requirement as a major factor affecting disease surveillance among the respondents.

A similar study conducted by Bawa and Umar (2009) using a cross-sectional survey to gather information from 144 respondents on the effective Disease surveillance system as a means of providing information on infectious diseases revealed that only 55 (38.2%) of the respondents were aware of DSN system. However, fifty-eight (65.9%) and 7 (8.0%) of the facilities involved in this exercise had up-to-date registers and DSN forms respectively. Diagnostic support was lacking in most of the health facilities.

2.9   Attitude of Health Workers

According to Smith et al. (2003) the attitude of professional healthcare workers (nurses, doctors, and health counselors) as well as age, sex, and knowledge of patient could

influence the attitude of individuals towards the disease. This would go a long way to enhance surveillance and its effectiveness as well as reduce the infection rate. In addition, stigmatization will decrease if people show compassion towards infected people (Parker &Aggleton, 2003). Also the values, beliefs, attitudes, cultural norms, family peers and the media influence a positive or negative behaviour among adolescents concerning the disease (Emmons et al., 1986 Chireh, 2011 p. 13).

Notwithstanding, attitude plays a major role in hepatitis surveillance. Attitudes as suggested by psychologist are formed through experiences in lifetime and are usually determined by belief and the evaluation of such beliefs. Attitudes formed by individuals in society can be comprehensive as well as unspecific (Chireh, 2011).

In their study comprehensive attitudes are more stable and are usually strongly held by the owners therefore, very difficult if not impossible to be influenced compared to unspecific attitudes (Fishbein et al., 1975 cited in Chireh, 2011 p. 12). A person's behavior can be predicted by using the strength and consistency of his or her attitude. In this regard, any intervention that is aimed at changing the behavior of an individual must first of all have enough information about his or her attitudes and then employ methods that will help change these attitudes. Attitudes of which one is aware of or that are based on one's own experience can predict behavior to a higher degree than attitudes that do not meet these criteria (Smith et al, 2003).

Smith et al (2003) indicated those possible factors that could help influence the attitudes of an individual include, the nature of the sender (e.g. the nurse, doctor, health worker or professional in a counseling situation), the receiver (e.g. the patient), the message itself and

the social context in which the information was communicated. Trustworthiness, expertise and interpersonal attraction are important signs that should be exhibited by the sender in order to influence a person's attitude. It is important to state that for a sender to be able to make an impact on the attitude of a receiver factors such as sex, age, self-esteem and knowledge have an important role to play.

Practice of Healthcare Workers in Hepatitis Surveillance System

Furthermore, poor health practices such as not waiting for the window period before screening blood donations for transfusion could mistakenly cause an undetected hepatitis virus being transferred to a patient. Sometimes the test system may not be able to detect antibody levels because they are very low. For example a study conducted in Kumasi, Ghana to assess the risk of hepatitis B virus infection by transfusion revealed that recipients of screened bloodless than 10 years of age had 1:11 ratio chance of contracting HBV even after screening (Allain etal., 2003).

Knowledge of Health Workers in Hepatitis Surveillance System

Knowledge does not necessarily influence a person's attitude. People may be knowledgeable about a particular risk behavior but may still go ahead to do it. Knowledge about hepatitis B is necessary but the provision of knowledge alone is not sufficient since it does not necessarily lead to the behavior change. Attitudes, values and beliefs (including perceptions about personal vulnerability to infection) as well as cultural norms and the influence of family, peers and the media are all important determinants of whether or not appropriate behavior is adopted by adolescents (Emmons et al, 1986).

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This segment describes the study design and the methods used in the determination of sample size, sampling of respondents, questionnaire design, data collection and analyses.

3.1   Study Area
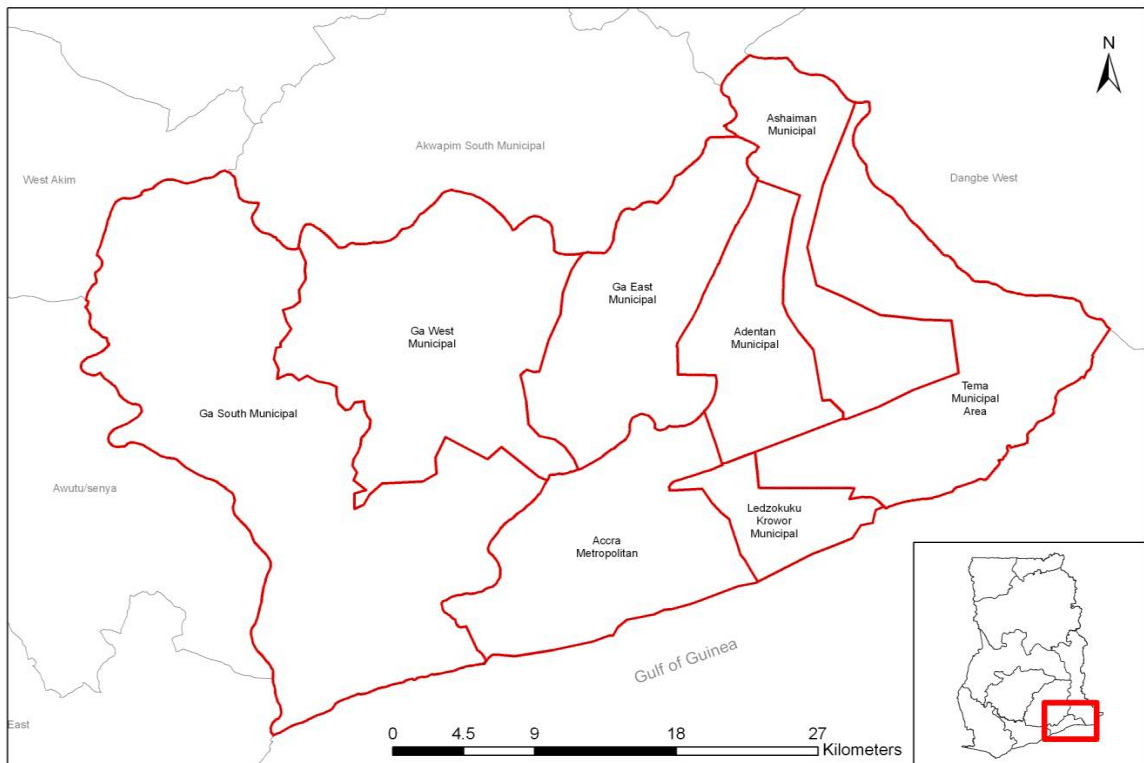
Figure: Map of the Greater Accra Metropolitan Area (GAMA)

   Source: Owusu (2013)

The study was carried out in the Greater Accra Metropolis (Accra Metropolitan) which is among the sixteen (16) Metropolitan, Municipals and Districts in the Greater Accra region of Ghana. Accra is the Administrative capital of the metropolitan assembly. The Accra Metropolitan shares common boundaries with La-dade Kotokpon Municipal from the east and Ga West Municipal, Ga Central Municipal and Ga South Municipal Assembly from the west as shown in figure 1 (map of the area). The metropolitan assembly also share common boundary with the Gulf of Guinea. The Municipality was established by Legislative Instrument (L.I) 2034. The population of the district according to 2010 population and housing census stands at 1,665,086 with 800,935 males and 864,151 females and a population density of 1,200/km2 (3,200/sq m).

The major language is Akan whereas the literacy level ranges from 73.4% to 77.6%. There are 2 tertiary health-care institutions, the Korle-Bu Teaching Hospital and 37 the Military Hospital. However, there are 10 government-owned general hospitals. Others are mission hospitals, maternity homes, and many private hospitals and clinics. There are five schools of nursing and midwifery and a school of health-care technology.

The study was carried out in the 10 government health facilities, Municipal health Directorate, Regional health Directorate, and the Surveillance department of the Ghana Health Service.

3.2 Study Design

The study design was a descriptive cross-sectional survey. According to Gay and Airasian (2006), the descriptive survey is concerned with the conditions or relationships that exist,

such as determining the nature of prevailing conditions, practices and attitudes; opinions that are held; processes that are going on; or trends that are developed.. This type of study design was chosen because, considering the purpose of this study, the research questions and the target population, it is the most appropriate design that will help the researcher obtain data from respondents to address the research questions and objectives of the study.

3.3 Study Population

The study population comprises of all health-care workers involved with Hepatitis Disease Surveillance Notification (DSN) in the eight (8) government health-care facilities within the Greater Accra Region. However the respondents for this study were the facility heads, medical record officers, the disease control focal persons. Also included were the program manager of hepatitis in GHS Disease Surveillance Department, health personnel involved in disease surveillance at the Accra Metropolitan health directorate and the Greater Accra Regional health directorate. The health-care facilities were also assessed for the availability of IDSR records.

3.4 Sampling Technique

The sample technique used in this study was purposive sampling as a means of selecting the government hospitals needed for the study. In all a total of eight (8) government hospitals were selected: La General Hospital; Achimota Hospital; Maamobi Hospital; Ridge Hospital; Princess Marie Louis Hospital; Weija Hospital; Amasaman Hospital; and Lekma Hospital.

Name of District	Name of the facility
La Dade Kotopon	La General Hospital
Accra Metro	Achimota hospital Princess Louis Marie
Ayawaso	Mamobi Government Hospital
Osu Klottey	Ridge Hospital
Ga South South Municipal	Weija Hospital
Ga West	Amasaman Hospital
Ledzokuku Krowor	Lekma Hospital

These hospitals were used as the benchmark to measure the health facility's performance in applying the right indicators under IDRS to ascertain the level of epidemic preparedness and alertness of threshold concerning hepatitis in Greater Accra Region.

Respondents that provided the data varied from hospital to hospital. However, the categories involved were nurses; disease control officers, medical assistants and doctors

Eligibility was based on consistent involvement with disease surveillance and public health; and willingness to take part in the exercise.

3.5 Surveillance reporting system

The disease surveillance reporting follows a hierarchical order from the community level to the national level. Surveillance activities are conducted by volunteers and healthcare workers using simple case definitions and report their observations to the periphery health facilities (WHO-

AFRO, CDC). At the health facility level, the data are differentiated including information from out-patient, in-patient, consulting room and laboratory registers into daily summary sheets and IDSR reporting forms. The data is then sent to the district health directorate for capturing into the electronic DHIMS2, which has the capability to automatically aggregate the information. The system automatically determines the number of reports submitted as against the number expected. It also indicates the number of reports which are submitted on time. The periphery, district and regional levels have specified times for IDSR reports submission and electronic transmission as shown in the table below.

Deadline for IDSR report to reach the next higher level of the health system in Ghana

Level	Immediate	Weekly	Monthly	Quarterly
Community	Within 24 hours	Not applicable	4th day of the following month	Not applicable
Health Facility	Within 24 hours	Tuesday of the following week	5th day of the following month	5th day of the month following the end of the quarter
District	Within 24 hours	Thursday of the following week	15th day of the following month	15th day of the month following the end of the quarter
Region	Within 24 hours	Friday of the following week	25th day of the following month	25th day of the month following

			the end of the quarter
National	Within 24 hours	Monday of the second week	5th day of the second month after the end of the month	5th day of the second month following the end of the quarter

Source: Adopted from the Ghana IDSR technical guidelines. (WHO-AFRO and CDC, 2011)

3.6 Study Procedure and Data Collection

Self-administered questionnaire to collect information on Knowledge, Attitude, and Practice of health personnel involved in hepatitis surveillance, distributed by research assistant to all health workers involved in viral hepatitis surveillance in the metropolis. The questionnaire was developed from a research on measles surveillance by Peter Adebayo Adewuyi. Information to be collected using the questionnaire consists of four sections which are:

Section A: demographic and background information of health workers involved in viral hepatitis surveillance

Section B: knowledge of health workers of viral hepatitis surveillance system

Section C: the attitude of the health workers to viral hepatitis surveillance system

Section D: practice and experience in viral hepatitis surveillance.

2. Review of documentation on IDSR monthly reporting (Viral hepatitis included). Reporting completeness is described in this study as the proportion of all expected IDSR monthly summary reports on Viral hepatitis that were actually submitted to the District Health Directorate. Reporting timeliness is described as the proportion of all expected IDSR monthly summary reports on Viral hepatitis that were actually submitted on the District health Directorate on time (due date).In addition the completeness and timeliness in keeping track of viral hepatitis in their district was also evaluated.

3.7   Data Analysis

Microsoft excel version 2007 was used for data entry. Data from the completed questionnaire was checked for double entry and consistency. The items in the questionnaire were grouped based on the responses given by the respondents and coded for easy usage of STATA.

Quantitative data was analyzed with the aid of STATA version14 and the results were generated from the data collected. The results were presented in the form of tables for easy appreciation. Tables and other statistical inferences were made from the data gathered. Representations like pie charts and bar charts were used to ensure easy and quick interpretation of data. Responses were also expressed in percentages. The data was analyzed based on the set objectives.

3.8   Ethical Considerations

Ethical approval was obtained from the Ensign Institutional Review Board and the Ghana Health Service Ethical Review Committee and permission to conduct the study was obtained from the Ghana Health Service.

In addition, a written consent was obtained from all the respondents at the selected health care facilities.

3.9 Limitation of the study

The study was conducted among health workers of the hepatitis surveillance system. Hence, the fear of potential victimization from higher authority was likely to influence their responses. In order to remove such fears, the respondents were assured of anonymity and confidentiality. The study design was limited in terms of determining trends and differences between health facilities.

The record review study depended on secondary data, which may induce information bias. Information gathered might be incomplete due to unavailability of some of the documents needed for the assessment. All these factors caused difficulties in conducting the assessment at this point. The limitations in the review study are related to different objectives and methodology in the studies making comparisons difficult. We are unable to review all the attributes of the surveillance system because of limited time and unavailability of relevant data.

RESULTS

4.0   Introduction

There has been general extensive information surveillance of communicable diseases but limited when it comes to viral hepatitis as well as the knowledge, attitude and practices of health workers towards this surveillance system. Thus data was collected from respondents based in the subject proposition. This section collates and analyses the study outcomes.

Demographic Characteristics of Respondents

The total number of respondents for this study was 76 health workers, out of which 51.32% (39) were females and 48.68% (37) were males. 27.63% (21) of respondents were within the age group of 20-29 years, 52.63% (40) respondents were within the age group of 30-40 years and 19.74% (15) respondents were within the age group of 41-56 years. The majority of respondents are in their prime age where productivity is high. Also approximately 80 per cent respondents have been with their respective health facilities for more than one year enough for them to know what is expected of them at work, as well as the rich experience they have acquired on the job. 80.26% (61) respondents have spent more than three years in IDSR whilst 19.74% (15) spent less than a year.

 Of the respondents, 47.37% (36) were nurses, 26.32% (30) were disease control officers, 5.26% (4) were doctors, while 21.05% (16) were other health workers such as Health Information Officers, Medical Assistants and Data Managers.

The demographic information is shown in the table below:

Table 1: Demographic Profile

Variables	Category	Frequency N=76 (%)
Age	20-29	21(27.63)
	30-40	40(52.63)
	41-56	15(19.74)
Sex	Female	39(51.32)
	Male	37(48.68)
Marital Status	Married	52(68.42)
	Single	24(31.58)
Religion	Christian	56(73.68)
	Muslim	20(26.32)
Ethnicity	Ewe	22(28.95)
	Ga	19(25.00)
	Twi	35(46.05)
Period of Work	Less than a Year	8(10.53)
	1 year	7(9.21)
	More than 3 years	61(80.26)

Job Position	Data Manager	2(2.63)
	Disease Control	20(26.32)
	Doctor	4(5.26)
	Health information Officer	9(11.84)
	Medical Assistant	5(6.58)
	Nurse	36(47.37)

However, having more nurses participating in this study was a blessing in that primarily the nurses are those who patients initially report to at the respective health facilities before they are assigned to a doctor.

Based on the objectives, the results have been divided into four parts:

i)   Performance of viral hepatitis surveillance system based on completeness, timeliness and sensitivity;

ii)   knowledge of health workers about viral hepatitis surveillance;

iii)   attitude of health workers on viral hepatitis surveillance; and

iv)   practices of health workers in relation to viral hepatitis surveillance in the 8 selected facilities in this study.

4.1 Evaluation of the Performance of Viral Hepatitis Surveillance System

The integrated disease surveillance and response (IDRS) is used alongside with the District Health Information Management System (DHIMS). The IDRS was implemented in 2002

whilst DHIMS was implemented in 2012 to improve surveillance data reporting and quality.

Completeness and Timeliness of Monthly IDSR Reports Downloaded from DHIMS

	Expected Reports	Completeness		Timeliness	
		2016	2015	2016	2016
		% (N)	% (N)	% (N)	% (N)
Ridge Hospital	12	58.33(7)	66.67 (8)	41.67(5)	58.33(7)
Maamobi Hospital	12	0 (0)	33.33 (4)	0 (0)	25 (3)
Ga South Hospital	12	91.67(11)	83.33(10)	66.67(8)	75.00(9)
LEKMA Hospital	12	25 (3)	0 (0)	8.33 (1)	0 (0)

None of the selected hospitals which provided data achieved complete reporting completeness for the monthly surveillance reporting. 58.33% (7 months) and 66.67% (8 months) reporting completeness achieved in 2016 and 2015 respectively for Ridge Hospital whilst Maamobi Hospital achieved 0% (0 months) and 33.33% (4 months) for 2016 and 2015 respectively. 91.67% (11 months) and 83.33% (11 months) reporting completeness achieved in 2016 and 2015 respectively for Ga South Hospital whilst LEKMA Hospital achieved 25% (3 months) and 0% (0 months) for 2016 and 2015 respectively. None of the hospitals under review achieved 100% (12 months) reporting completeness for the years 2016 and 2015.

I could not review the rest of health facilities visited because I could not obtained data on completeness from them.

Monthly Disease Surveillance of Acute viral hepatitis cases

2016	Ridge Hospital	Maamobi Hospital	Ga South Hospital	LEKMA Hospital	Total
January	-	-	7	-	**7**
February	370	-	15	-	**385**
March	401	-	8	-	**409**
April	375	-	3	-	**378**
May	-	-	9	-	**9**
June	-	-	10	3	**13**
July	-	-	3	4	**7**
August	367	-	8	1	**376**
September	-	-	-	-	**-**
October	351	-	8	-	**359**
November	301	-	6	-	**307**
December	263	-	6	-	**269**
Total	2428	-	83	8	2519

2015	Ridge Hospital	Maamobi Hospital	Ga South Hospital	LEKMA Hospital	Total
January	23	-	1	-	**24**
February	16	-	5	-	**21**

March	-	-	6	-	**6**
April	205	-	8	-	**213**
May	341	-	8	-	**349**
June	266	-	4	-	**270**
July	-	2	4	-	**6**
August	221	-	6	-	**227**
September	300	-	-	-	**300**
October	-	2	-	-	**2**
November	312	1	10	-	**323**
December	262	11	7	-	**280**
Total	1946	16	59	-	2021

The total hepatitis surveillance cases reported was 2,519 in 2016 and 2,021 in 2015. The 2016 figure saw an increase of 498 cases representing 24.64%. Only 4(50%) of hospitals selected gave out data on their hepatitis disease surveillance reporting.

Sensitivity

The sensitivity of a surveillance system can be considered at two levels. First, at the level of case reporting's, the proportion of cases of a disease or health condition detected by the surveillance system. The primary emphasis in assessing sensitivity - is that most reported cases are correctly classified to estimate the proportion of the total number of cases in the population under surveillance being detected by the system, represented by A/(A+B). Detection of viral hepatitis can be challenging because no single case definition is either sensitive or specific for it. The identification of viral hepatitis infection is inherently flawed

because the vast majority of cases are asymptomatic and patients do not seek medical care or testing.

	Respondents Responses			
	Yes (A)	No (B)	Total	Sensitivity
Practices in Hepatitis surveillance	277	464	741	0.3738
Knowledge of Hepatitis Surveillance	549	311	860	0.6384
Total	826	775	1,601	

4.2 Knowledge of Health Workers on Viral Hepatitis Surveillance system in Ghana

This section seeks to evaluate health workers knowledge on viral hepatitis surveillance at the selected 8 facilities within the Greater Accra Region of Ghana.

Among the health workers 92.11%(70) know that viral hepatitis cases are reported on monthly basis, 75% (57) know that viral hepatitis presents with acute jaundice, dark urine, anorexia, malaise and fatigue, 84.21% (64) know hepatitis can be prevented through vaccination. 94.74% (72) respondents are aware that monthly communicable disease surveillance form is always used in viral hepatitis surveillance, whilst 50% (38) respondents are aware that CD 1 form is always used in viral hepatitis surveillance.

Table2: Knowledge of health workers on Viral Hepatitis surveillance

Knowledge	Yes	No	Don't know
	% (N)	% (N)	% (N)

Viral Hepatitis is an acute viral illness caused by at least one of the five distinct hepatitis viruses	72.37(55)	27.63(21)	0(0.00)
Viral Hepatitis infection occur in early childhood	76.32(58)	23.68(18)	0(0.00)
Viral Hepatitis presents with acute jaundice, dark urine, anorexia, malaise, and fatigue	57(75)	19(25)	0(0.00)
Viral Hepatitis has a case definition	77.63(59)	22.37(17)	0(0.00)
Viral Hepatitis surveillance is passive only	67.11(51)	89(25)	0(0.00)
Viral Hepatitis surveillance is active only	15.79(12)	84.21(64)	0(0.00)
Viral Hepatitis cases are to be reported on monthly basis	92.11(70)	7.89(6)	0(0.00)
Viral Hepatitis cases are to be reported on weekly basis	2.63(2)	97.37(74)	0(0.00)
Viral Hepatitis infection can be	84.21(64)	15.79(12)	0(0.00)

prevented through vaccination.			
I should expect feedback when I report cases	82.89(63)	17.11(13)	0(0.00)
Monthly Communicable Disease Surveillance Report Form is always used in Viral Hepatitis surveillance	94.74(72)	5.26(4)	0(0.00)
CD 1 Form is always used in Viral Hepatitis surveillance	50(38)	50(38)	0(0.00)

The findings of this study revealed high knowledge of hepatitis surveillance system but overall 67.11 per cent respondents indicate that is passive practice. Thus knowledge of the hepatitis surveillance is very high.

Overall Knowledge Level of Respondents

Level	Frequency	Percentage
Low	26	34.21
High	50	65.79
Total	**76**	**100.00**

Bivariate Analysis of Factors associated with knowledge level of respondents

Variables	Knowledge Level		P-Value
	High % (N)	Low % (N)	
Age group			
20-29	28(14)	26.92(7)	0.128
30-40	46(23)	65.38(17)	
41-56	26(13)	7.69(2)	
Sex			
Female	42(21)	69.23(18)	0.031*
Male	58(29)	30.77(8)	
Marital status			
Married	70(35)	65.38(17)	0.796
Single	30(15)	34.62(9)	
Period of Work			
Less than a Year	12(6)	7.69(2)	0.549
1 year	12(6)	3.85(1)	
More than a year	76(38)	88.46(23)	
Job Position	28(14)	23.08(6)	0.858
Data Manager	6(3)	3.85(1)	

Disease Control	12(6)	11.54(3)
Doctor	8(4)	3.85(1)
Health Information officer	42(21)	57.69(15)
Medical assistant		
Nurse		

*significant at α<0.05

Sex of the respondents was significantly associated with the knowledge level of the respondent with a P- value of 0.031. Females were significantly more knowledgeable about the disease than males.

Positions Held by Respondents

(Bar chart showing:)
- Data Manager: 3%
- Disease Control: 26%
- Doctor: 5%
- Health information Officer: 12%
- Medical Assistant: 7%
- Nurse: 47%
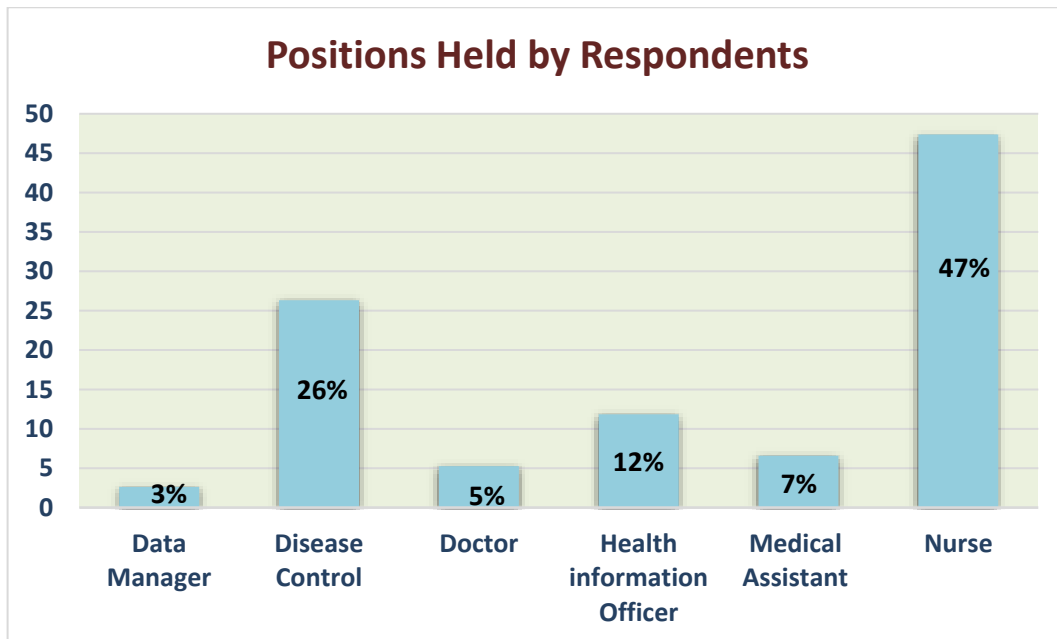
4.3 Attitude of Health Workers towards Viral Hepatitis Surveillance

Knowledge of health workers were graded on a scale of highest to lowest (strongly agree is 4, agree is 3, slightly agree is 2 and disagreed is 1)

Out of 76 health workers who participated in the study92.11% (70) agreed that the IDSR is necessary whilst 7.89% (6) disagreed. Of the 76 health workers 6.58% (5) slightly agreed that Hepatitis surveillance system is too burdensome, 15.79% (12) agreed and 77.63% (59) do not agreed that the hepatitis reporting forms are too burdensome. 14.47% (11) said hepatitis does not deserve attention, whilst 85.53% (65) said hepatitis deserve the needed attention for surveillance reporting. 72.37% (55) of the health workers don't believe the case based surveillance system capture all cases of suspected measles. Meanwhile, the majority of the health workers 43.42% (33) believe they receive good co-operation from their colleagues to make data collection easy. This is depicted by the table below:

Table 4: Attitude of Health workers towards Hepatitis Surveillance

Attitude	Strongly Agree % (N)	Slightly Agree % (N)	Agree % (N)	Don't Agree % (N)
IDSR is not really necessary	0(0.00)	0(0.00)	7.89(6)	92.11(70)
The Viral Hepatitis surveillance system is simple to use	42.11(32)	25.00(19)	32.89(25)	0.00(0)

The surveillance system is too burdensome, too many forms to fill.	0(0.00)	6.58(5)	15.79(12)	77.63(59)
Viral Hepatitis infection does not really deserve the attention given it.	0(0.00)	0(0.00)	14.47(11)	85.53(65)
All Viral Hepatitis cases are captured by the system	0(0.00)	7.89(6)	19.74(15)	72.37(55)
I believe I get good co-operation from my colleagues to make my data collection easy	21.05(16)	28.95(22)	43.42(33)	6.58(5)

4.4 Health Workers Practices in relation to Hepatitis Surveillance

This section evaluates health workers practice towards hepatitis B surveillance of the selected facilities within the Greater Accra Region of Ghana.

96.05% (73) of the health workers said they use the monthly form to record suspected hepatitis cases. While the majority 84.21% (64) of the health workers claimed they actively search for viral hepatitis cases in health facilities. The minority of 5.26% (4) of health workers claimed that they actively search for cases of viral hepatitis in their community (Table).

Table 6: **Health Workers' Practices in Hepatitis Surveillance**

Practice	Yes	No
	% (N)	% (N)
I use Weekly Notifiable Disease Report form	0(0.00)	100(76)
I use Case-based Surveillance Reporting form	7.89(6)	92.11(70)
I use line list for reporting case based information when several cases occur during a short period	0(0.00)	100(76)
I use Monthly Communicable Disease Surveillance Reporting form	96.05(73)	3.95(3)
I use Viral Hepatitis Quarterly Report form	3.95 (3)	96.05(73)
I collect blood sample for only obvious cases of viral hepatitis	81.58(62)	81.58(14)
I actively search for Viral Hepatitis cases in the Health Facilities	84.21(64)	15.79(12)
I record cases in a register in the Health Facility	84.21(64)	15.79(12)
I receive feedback whenever I report cases	0 (0)	100(76)
I search actively for Viral hepatitis cases in my community	5.26(4)	94.74(72)

Source: Fieldwork, 2017

CHAPTER FIVE

5.0 DISCUSSION

5.1   Sensitivity of hepatitis surveillance reporting

Studies have shown that under-reporting may adversely affect public health efforts by distorting trends observed in the incidence of disease, preventing accurate assessment of potential benefits or impact of control programmes and preventing timely identification of disease outbreaks. Furthermore, a high sensitivity is essential for surveillance of diseases, for accurately estimating the disease incidence, and for making correct national or international comparisons(Jansson et al 2005).

This study conducted among selected healthcare providers, showed that the surveillance system did not capture all the occurrences of cases of hepatitis in these hospitals during the period that was reviewed. This could be due to negligence on the part of the disease surveillance officers who are to collect data or the fear of some health facilities concerning confidentiality of the data(Tan et al. 2009). We could deduce from this finding that the performance of the surveillance reporting system did not capture correctly data for all periods reviewed.

Sensitivity of hepatitis surveillance in our study was generally low. This estimate is comparable to estimates from other parts of the world.

Though most of the health facilities have registers which should naturally translate into high sensitivity as assumed in a study in Tanzania(Nsubuga et al. 2002), it is not the case in

this study. This could probably be because of poor extraction of hepatitis information by the record officers, or inability of the diseases surveillance officers to collect accurate information from the health facilities due to poor sense of obligation. However, this is contrary to result found in a review of completeness of reporting studies conducted in USA which concluded that geographic location appear to be of less importance in determining the completeness of reporting.

The validity of the estimation method which is the capture-recapture method could not be ascertained because it is not within the scope of this study, however the three assumptions necessary for a credible estimate was adhered to.

According to Nsubuga et al. (n.d.), surveillance performance assessment provides baseline data to measure progress; to identify and build consensus on the national priority communicable diseases; to identify surveillance gaps of the selected priority diseases; to document the strengths, weaknesses, and opportunities of the existing systems; and to make appropriate recommendations. This is a fact but contradict our finding on the number of cases reported on monthly basis which is inadequate and cannot be used in taking any decision.

Public health surveillance requires standardized, systematic, ongoing collection and management of reliable data (CDC, 1991).This cannot be said about our finding in terms of the monthly reports from the various hospitals. The reports are not standard and cannot be used for decision making

5.2   Knowledge of health workers on hepatitis surveillance

The study showed that majority of the health workers has a high knowledge of hepatitis surveillance. Many are aware about case definition, signs and symptoms of the disease and the reporting procedures for hepatitis. This high knowledge is similar to a study carried out in Anambra which showed that 89% of health workers are aware of diseases reporting. However, another study in Benin showed that only 11.9% of the health workers had a good knowledge of disease notification. But concerning knowledge of specific forms used by the health workers, our study showed that average numbers of health workers know the right forms to use and it is similar to the findings of a study conducted by Bawa et al which showed knowledge of IDSR forms was 33% among health workers in northern Nigeria. In other words, majority of them are not involved in active case search which is cardinal to the case based surveillance system.

According to (Emmons et al, 1986), knowledge about viral hepatitis is necessary but the provision on knowledge alone is not sufficient since it does not necessarily lead to the behavior change. This supports our findings that though majority of the health workers have good knowledge on hepatitis surveillance it did not reflect in the performance of the system in terms of their reporting of cases monthly and completely.

This study disagrees with findings by Afihene, Duduyemi, Tetteh, and Khatib (2015) that the knowledge of Ghanaian health care workers on viral hepatitis is poor and unsatisfactory. This study rather shows high level of health workers on viral hepatitis. This

high knowledge can be due to increase awareness and continuous training in communicable diseases

5.3 Attitude of Health workers in the case-based surveillance

Our study showed that majority of the health workers has a positive attitude towards hepatitis surveillance system. This could be due to better infrastructure in the urban areas and possibly easier accessibility to reporting forms. Although recent studies have shown that urban advantage in health outcomes is diminishing in developing countries (Fosto 2007).

In a study conducted in Taiwan, one of the reasons why private healthcare doctors don't report diseases was because of the perception that the forms are complex to fill (Tan et al. 2009). This attitude is similar to our findings in which about half of the health workers believe that there are too many forms to fill and that the system is burdensome. Majorities however, are of the opinion that hepatitis surveillance is necessary.

According to Smith et al. (2003) the attitude of professional healthcare workers (nurses, doctors, and health counselors) as well as age, sex, and knowledge of patient could influence the attitude of individuals towards the disease surveillance system. This supports our study with the finding that health workers have positive attitude towards viral hepatitis.

Research on performance of surveillance system by Nsubuga et al. (n.d.) have indicated that a rising number of top managers in ministries of health and finance in developing countries and donor agencies are recognizing that data from effective surveillance systems

are useful for targeting resources and evaluating programs. This support the outcome of this study, which revealed that majority of the respondents (92.11%) agree that there is the need for the hepatitis disease surveillance system.

5.4 Practice of Health Workers towards Hepatitis Surveillance System

The observations from this study reveal that health facilities only pay attention to surveillance when a patient shows symptoms. Results of data collected shows that 96.05% of HC workers use monthly forms to record suspected cases. However, this does not translate to the completeness of recorded cases received and the number of hospitals that provided records on recorded cases.

HC workers are aware of hepatitis and they look out for signs of hepatitis in their health facilities and communities. However 81.58% of respondents actually collect or recommend collection of blood samples for obvious cases.

According to the National Integrated Disease Surveillance and Response News of the Public Health Department, Ministry of Health(2002),epidemic-prone diseases and disease targeted for eradication are recorded weekly, this supports our findings that viral hepatitis is not considered a disease targeted for eradication and not epidemic prone disease therefore it is reported on monthly bases. The monthly reporting helps to report on the number of suspected cases, laboratory confirm cases and total death relating to the disease in a specific month.

5.5   Completeness of Surveillance Reports

Two hospitals performed better in this regard that represents 25.00% of the total respondents. The reporting completeness achieved was 91.67% in 2016 and 83.33% in 2015 for Ga South hospital whilst others score 33.33% and below in 2015 and 25% and below in 2016. Among the four hospital data analysed, 2,519 cases was recorded in 2016 and 2,021 recorded in 2015, the reported hepatitis cases increased by 24.64% in 2016.

5.6 Timeliness of Hepatitis Surveillance Reports

Timeliness is the proportion of all expected reports in a reporting system received by a given date (due date). According to the respondents, timeliness functioned well during epidemics, shown by a quote below: *"If we have an epidemic the system works well ". However in non-epidemic situations especially hepatitis which is not under any funded program, the timeliness of surveillance reporting is that effective.*

CHAPTER SIX:

6.1   CONCLUSION

In conclusion, a well-functioning hepatitis surveillance system is the basis to achieve viral hepatitis prevention and control. The system has clear objectives and guidelines; however, it has some defects at the implementation level on issues such as data recording, data keeping and analysis. This study has shown that health workers have high knowledge in hepatitis surveillance. Though the completeness is generally low they can still be used to monitor trends in the surveillance of hepatitis, because sudden change can be noticed easily. It is clear that hepatitis surveillance and reporting needs to be improved upon to increase its reliability.

This study has also shown that health workers' attitude and practice is high. However, this did not translate to better overall data completeness at the health facilities.

Further research needs to be done to identify and understand other factors which influence sensitivity of hepatitis surveillance system and maintenance of collected records for national data analysis.

6.2   RECOMMENDATIONS

The findings of this study have great implications for the disease surveillance officers, record officers and health practitioners who are involved in hepatitis surveillance system. The low sensitivity of the surveillance system requires that there is need to improve on data collection procedures and ascertainment of suspected hepatitis cases.

The negative association between sensitivity and knowledge, attitude and practice require that emphasis be laid on supportive supervision of health workers and surveillance officers

involved in hepatitis surveillance reporting and recording. The recommendation is addressed to the stakeholder groupings as follows:

Ghana Health Service/ Ministry of Health

- The Ghana Health Service and Ministry of Health rely on surveillance data to track the incidence of acute infections, guide development and evaluation of programs and policies designed to prevent infection and minimize the public health impact on viral hepatitis. Effective systems for conducting surveillance are needed to ensure accurate reporting and recording of all cases,

- There will be need to also train and retrain health workers on importance of hepatitis surveillance so that completeness of reporting can be improved upon.

- Establish sanctions against non-compliant health care facilities in order to encourage timely monthly reports.

Civil Society Organisations/ Non-Governmental Organisations

- There will be a need to partner the Ghana Health Service in strengthening the viral hepatitis surveillance system.

Management of Health Facilities

- The hepatitis surveillance system should build a strong collaborative link with the laboratories system in order to capture all patients that test positive for hepatitis.

Management must establish sanctions against non-compliant health care professionals in order to encourage timely monthly reports.

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APPENDICES

Appendix 1: CONSENT FORM

TITLE: EVALUATION OF HEPATITIS SURVEILLACE SYSTEM IN THE GREATER ACCRA METROPOLIS

I Christine Ahiale of the Ensign College of Public Health, Kpong, will carry out this study.

Procedure

The research will involve your cooperation in answering various questions that have to do with your duty as health worker in Viral Hepatitis Surveillance in Greater Accra Metropolis so that the reporting process and procedure can be improved upon.

Risk

This research poses no risk to you or your duty. All questionnaire completed in this research will be given numbers and names will not be recorded. You answers will be kept confidential.

Participation is voluntary and participants can withdraw from the exercise at any point in time without any penalty attached to it.

Consent

If you have understood the above statement, you would be required to sign below as a confirmation that you have agreed to participate in the exercise.

Now that the study has been fully explained to me and I fully understand the content of the study process. I will be willing to take part in the study:

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Signature of Participant   Interview Date

Appendix 2: QUESTIONNAIRE

QUESTIONNAIRE ON PERFORMANCE OF HEPATITIS SURVEILLANCE SYSTEM AND KNOWLEDGE, ATTITUDE AND PRACTICE OF HEALTH WORKERS INVOLVED IN HEPATITIS SURVEILLANCE IN THE GREATER ACCRA METROPOLIS, GHANA

Read to each person to seek consent for participation

Good day.This Questionnaire is part of my thesis on Evaluation of Hepatitis Surveillance System in the Greater Accra Metropolis that will help to provide information on the performance of hepatitis surveillance and knowledge, attitude and practice of health workers who are participating in Hepatitis Surveillance in the Accra Metropolis. The questionnaire has a number of components and asks questions about the performance of the surveillance system, what you know, believe and practice in Hepatitis Surveillance.   The interview will be approximately 15 minutes and your answers will help to improve public health services. This interview is anonymous and confidential and will be used only for research purposes, so please be as truthful as possible. Completion of this questionnaire is voluntary and you have a right to decline to participate.

 Thank you for your assistance.

Would you like to participate in the survey?   **YES**   **NO**

Section A: Background information of health workers involved in viral hepatitis surveillance

1. Sex Of Respondent	01 Male	
	02 Female	
2. How Old Were You At Your Last Birthday?	☐ ☐ ars Old	

3.For How long have you been working in this post?	01 Less than 1 year 02 1 year 03 More than a year	
4. What Is The Highest Level Of Schooling You Completed?	01 Primary 02 Junior Secondary 03 Senior Secondary 04 Tertiary 05 Postgraduate	
5. What is your job title/position?	01 Medical Doctor 02 Nurse 03 Medical Assistant 04 Disease Control Officer 05 Other Specify	
6. What is your Marital status?	01 Single 02 Married 03 Separated	

	04 Divorced 05 Widowed	
7. What Is Your Religion?	01 None 02 Christian 03 Muslim 04 Traditional 05 Other……………	
8. Tribe	01 Ga 02 Twi 03 Ewe 04 Other……………	

Section B: Knowledge of health workers on Viral Hepatitis surveillance

Please choose the most appropriate answer by ticking within the box

Knowledge	Yes	No	Don't know

1. Viral Hepatitis is an acute viral illness caused by at least one of the five distinct hepatitis viruses			
2. Viral Hepatitis infection occur in early childhood			
3. Viral Hepatitis presents with acute jaundice, dark urine, anorexia, malaise, and fatigue			
4. Viral Hepatitis has a case definition			
5. Viral Hepatitis surveillance is passive only			
6. Viral Hepatitis surveillance is active only			
7. Viral Hepatitis cases are to be reported on monthly basis			

8. Viral Hepatitis cases are to be reported on weekly basis			
9. Viral Hepatitis infection can be prevented through vaccination.			
10. I should expect feedback when I report cases			
11. Monthly Communicable Disease Surveillance Report Form is always used in Viral Hepatitis surveillance			
12. CD 1 Form is always used in Viral Hepatitis surveillance			

Section C: Attitude of Health workers towards Hepatitis Surveillance

Please choose the most appropriate answer

Don't agree =4, slightly agree =3, agree= 2, strongly agree= 1

Attitude	Strongly Agree	Slightly Agree	Agree	Don't Agree

1. IDSR is not really necessary				
2. The Viral Hepatitis surveillance system is simple to use				
3. The surveillance system is too burdensome, too many forms to fill.				
4. Viral Hepatitis infection does not really deserve this attention given it.				
5. All Viral Hepatitis cases are captured by the system				

6. I believe I get good co-operation from my colleagues to make my data collection easy				

Section D: Health Workers' practice in Hepatitis Surveillance

Practice	Yes	No
1. I use Weekly Notifiable Disease Report form		
2. I use Case-based Surveillance Reporting form		
3. I use line list for reporting case based information when several cases occur during a short period		
4. I use Monthly Communicable disease Surveillance Reporting form		
5. I use Viral Hepatitis Quarterly Report form		
6. I collect blood sample for only obvious cases of viral hepatitis		
7. I actively search for Viral Hepatitis cases in the Health Facilities		
8. I record cases in a register in the Health Facility		

9. I receive feedback whenever I report cases		
10. I search actively for Viral hepatitis cases in my community		