IMPLEMENTATION OF INTEGRATED DISEASE SURVEILANCE AND RESPONSE BY PUBLIC AND PRIVATE HEALTH FACILITIES IN TWO LOCAL GOVERNMENT AREAS OF OYO STATE

Adesola Felicia YINKA-OGUNLEYE

BDS(Ib)

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DECLARATION

The work reported in this dissertation was undertaken by me at the Department of Epidemiology and Medical Statistics of the University of Ibadan. This dissertation has not been submitted either in part or whole to any other examining body, in support of an application for another degree or qualification

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ADESOLA FELICIA YINKA-OGUNLEYE

CERTIFICATION

I certify that this work was carried out at the Department of Epidemiology and Medical Statistics of the University of Ibadan under my supervision.

Dr Ikeoluwapo. O. Ajayi. MB,BS.; M.Cl Sc; MPH; PhD; FMCGP; FWACP.

Department of Epidemiology and Medical Statistics

Faculty of Public Health

College of Medicine

University of Ibadan

DEDICATION

This work is dedicated to God Almighty who made it possible to start this project and to finish it successfully. To him be all the Glory.

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ABSTRACT

Integrated Disease Surveillance and Response (IDSR) was adopted in 1998 by the World Health Organisation–Regional committee for Africa as a strategy for strengthening the existing weak and multiple national surveillance system. Within the framework of IDSR strategy, all health facilities are required to have IDSR focal persons, ensure timely and regular provision of disease data to the Local Government Area (LGA) using approved IDSR reporting format and instruments. However, there is paucity of information regarding its implementation. This study was carried out to assess and compare the knowledge and practice of disease surveillance, and implementation of IDSR strategy at public and private health facilities in two LGAs of Oyo State, Nigeria.

A comparative cross-sectional study was carried out in all health facilities in Ibadan North (urban) and Ibarapa East (rural) LGAs selected by cluster sampling technique. Surveillance focal person or a facility head designated personnel in each health facility was interviewed using a pretested semi-structured questionnaire. Information was obtained on knowledge of disease surveillance, pre-existing surveillance practices and IDSR implementation. Response to each variable was scored 1 for correct and 0 for incorrect response. Composite scores were computed given maximum scores of 29, 6 and 13 for knowledge, pre-existing surveillance practice and IDSR implementation scores respectively. Data were analysed using descriptive statistics and student's t-test.

One hundred and thirty-two health facilities [30 public (22.7%) and 102 private (77.3%)] were studied. There were 117(88.6%) fr om urban and 15(11.4%) from rural LGAs. Overall mean knowledge score was 16.1± 4.1. Mean knowledge score in the public and private facilities were

15.2 ± 3.4 and 16.4 ± 4.2 respectively; and in the LGAs; 16.3±4.1 (Ibadan north) and 14.5±3.4 (Ibarapa East). Overall score for mean disease surveillance practice was 2.7±1.4. The mean disease surveillance practice score was 2.8±1.5 in public and 2.7±1.5 in private facilities. The

overall median IDSR implementation score was 1.00 (min 0.00, max 11.00) .The median IDSR implementation score was significantly higher in public facilities 3.00 (min 0.00, max 11.00) compared with 1.00 (min 0.00, max 11.00) in the private facilities, $p<0.05$. No difference existed in the median implementation scores between Ibadan North, 1.00(min 0.00, max 11.00) and Ibarapa East,2.00(0.00-7.00) LGAs. Surveillance focal persons existed in only 11 facilities (8.3%). Mean scores for pre-existing surveillance practice where focal persons existed was 3.5±1.5 compared with 2.6±1.4 where none existed ($p< 0.05$). Median IDSR implementation scores in facilities with surveillance focal person was 3.00 (min 1.00, max 11.00) and 1.00 (min 0.00, max 11.00) where none existed ($p<0.05$).

Knowledge and practice of disease surveillance as well as implementation of Integrated Disease Surveillance and Response strategy were generally below average in all the health facilities irrespective of status and location with poorer implementation in the private facilities. The existence of a surveillance focal person improved surveillance practice. There is a need to institute measures to improve awareness and participation of health facilities in disease surveillance to achieve set goals.

Keywords: Integrated disease surveillance, Health facilities, Implementation compliance.

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LIST OF ABBREVIATIONS

AFP	Acute Flaccid Paralysis
AFRO	Africa Regional Office
CDC	Centre for Disease Control
DSN	Disease Surveillance and Notification
EPR	Epidemic Preparedness and Response
FMOH	Federal Ministry of Health.
FGN	Federal Government of Nigeria
GAR	Global Alert Response
GOARN	Global Outbreak alert Response Network
ICG	International Coordinating Group
IDSR	Integrated Disease Surveillance and Response
LGA	Local Government Area
OYSMOH	Oyo State Ministry of Health.
PHC	Primary Health Care
RBM	Roll Back Malaria
SOP	Standard Operating Procedure
WHO	World Health Organisation.

CHAPTER ONE

INTRODUCTION

1.1 Background

Communicable diseases remain the most common causes of death, illnesses and disabilities in the developing countries of the world including Nigeria (WHO, 2008). These diseases include malaria, measles, cerebrospinal meningitis, cholera, yellow fever, Lassa fever, diarrhoea, pneumonia and lately HIV/AIDS to mention a few. The mortality and morbidity rates from these communicable diseases remain unacceptably high in Nigeria as it is in most other developing nations despite existing control programmes (FMOH, Nigeria 2005). According to the WHO fact sheet 2008, the leading causes of death in many developing countries include lower respiratory tract infections, diarrhoea diseases, HIV, tuberculosis and malaria with the significant contributions to global mortality and morbidity coming from the rates of infectious diseases in low-income countries (Global Health Council, 2009).

The disease surveillance system was first introduced in Nigeria in 1988 in response to a major outbreak of yellow fever which occurred between 1986 and 1987 affecting ten out of the then nineteen states of the federation with attendant high mortality and morbidity (FMOH, Nigeria 2005). The magnitude of this outbreak and the devastating effects on the nation was largely attributable to the non existence of disease surveillance and notification systems in most states of the country prior to this period. Subsequently, a disease surveillance and notification system was put in place nationally with forty diseases of public health importance identified and designated for routine monthly notification and ten of these designated as epidemic prone diseases for immediate reporting. The National Council on Health adopted this Disease Surveillance and

Notification System (DSN) in the year 1989 and standard reporting forms designated DSN001 and DSN002 were introduced for monthly and immediate reporting respectively.

However, in the subsequent years following the inauguration of the DSN, varying degrees of success were recorded in its implementation and its effectiveness and efficiency remained a cause for concern for all stakeholders in the public health sectors of the country as it failed to produce the desired information required for timely responses to diseases outbreaks. These concerns were further compounded by the vertical surveillance nature of some disease control programmes and the almost non- existing participation of laboratories in surveillance activities (FMOH, Nigeria 2005).

In response to this unsatisfactory developments in the disease surveillance and notification systems which was similarly prevalent in most other African countries, the World Health Organization Regional Committee for Africa in her 48th session in Harare, Zimbabwe in September, 1998 advocated for the assessment and strengthening of the existing surveillance systems in the member states. This effort gave birth to the Integrated Diseases Surveillance and Response System (IDSR) (FMOH, Nigeria 2002 ; WHO,2000). The WHO/AFRO had a key role in developing generic technical guidelines (WHO,2001A) for adoption by implementing countries, as well as providing ongoing technical assistance and consultation.

The broad objective of the IDSR is to contribute to reduction of mortality, morbidity and disability from diseases through accurate, complete and timely reporting with respect to data gathering and transmission for effective control and prevention of communicable diseases in the country. The IDSR implementation process started in Nigeria in June 2000 with an orientation workshop that sensitized national program managers of the various vertical programs and

partners of IDSR. The steering committee was constituted by the Federal Government of Nigeria in June 2001 to carry out a review of the existing disease surveillance system in the country and secure a consensus on the list of the priority diseases. They were able to enumerate several shortcomings of the former system on account of which recommendations were made to strengthen the newly introduced IDSR. Some of these shortcomings were: vertical surveillance by some disease programmes, multiplicity of reporting forms and formats, incomplete and untimely reporting, inadequate prepositioned medicines and vaccines, lack of communication equipments, absence of case management protocols, inadequate laboratories facilities and almost non- involvement of existing ones, high prevalence of communicable diseases like malaria, diarrhoea, pneumonia, measles, tuberculosis and HIV/AIDS and inadequate funding (Davey *et al*, 2006, FMOH, Nigeria 2006, FMOH, 2005, WHO 2000, Taylor *et al*, 1997).

In order to ensure a functional and effective integrated disease surveillance and response system in Nigeria, the steering committee recommended the development of national standard case definitions and management protocols for priority diseases, relevant trainings for IDSR and provision of budget line for IDSR. A national policy was subsequently formulated by the Federal Government through the Federal Ministry of Health to guide and provide the necessary environment for the planning, implementation, monitoring and evaluation of IDSR at all tiers of government including government parastatals, private sector, non -governmental organisations and partners (FMOH, Nigeria 2005).

Furthermore, some strategies were outlined to ensure the successful implementation of the IDSR. These include continuous advocacy for support by policy makers, opinion leaders and partners, identification of a focal unit for IDSR in all health facilities, local government area PHC department, State Ministries of Health and the Federal Ministry of Health with a focal person

assigned to this unit and provision of basic communication equipments at all these levels. Other strategies are periodic training and retraining of health workers, program officers and IDSR focal persons at all levels by a set of core trainers established at the Federal Ministry of Health with partners using the WHO generic IDSR training modules adapted for Nigeria, development of a comprehensive database of the twenty –one priority communicable diseases by the national IDSR unit and provision of data management guidelines for use at all levels, establishment of sentinel sites, epidemic preparedness committees at all levels, case based surveillance activities and strengthening of laboratories and case management (FMOH, Nigeria 2002, 2005).

1.2 Statement of the Problem

Among several other epidemic preparedness approaches, disease surveillance and response, early case detection and management and prompt case reporting are very critical. Unfortunately, there are no convincing indications that Integrated Disease Surveillance and Response (IDSR) programme, long promoted by the World Health Organisation and its partners in Africa is very functional in this sub region. There is paucity of information on the implementation and evaluation of this surveillance system in Nigeria and many other countries.

Nigeria continued to experience disease outbreaks in epidemic proportions with very devastating outlooks in the succeeding years following the introduction of the IDSR in the country. Various examples include the Yellow fever outbreak in May 2000, Cholera outbreaks in December 2001, December 2004 and September 2005, Meningococcal disease outbreak of March 2004, Acute fever and rash syndrome in March 2005 and the Avian Influenza outbreaks of February, March 2006 and January 2007 to mention a few (WHO, Nigeria-GAR). The magnitude of loses recorded on account of these infectious diseases outbreaks in Nigeria were related to the lack of

timely and adequate responses which the IDSR system is expected to have guaranteed if functional.

1.3 Justification and Rationale for the study

In view of the broad objective of the IDSR system which is to contribute to the reduction of mortality, morbidity and disability from diseases through accurate, complete and timely information with respect to data gathering and transmission for effective control and prevention of communicable diseases in the country, a national policy was put in place which specifies the priority diseases for reporting, the strategies for its implementation, the expected roles and responsibilities of all stakeholders inclusive of the health facilities, monitoring and evaluation policy, projections for operational researches and the core indicators of IDSR.

The implementation of the IDSR is expected to be in phases starting from the community level, the health facilities, local government areas, states and the federal levels utilizing the local government area as the lowest administrative unit within the national health system.

The core indicator for IDSR routine reporting activity is the proportion of health facilities submitting weekly or monthly surveillance reports on time to the local government area (LGA) using the designated forms(IDSR 002 and 003). Similarly, the indicator for reporting outbreaks from the LGA to national level is set at the proportion of reported outbreaks of epidemic prone diseases notified to the next higher level in the IDSR structure within two days of surpassing the epidemic threshold among other IDSR core indicators put in place. It is also made mandatory that all health facilities should have a focal person for IDSR saddled with the responsibilities of the implementation of the strategy.

The health facilities thus play a very significant role in disease surveillance and implementation of IDSR. In the light that there are more private than public health facilities (OYSG, 2006), its imperative that the private Facilities are involved in surveillance activities though its been coordinated by the public sector. In view of the fact that functional disease surveillance and response system depends on adequate capacity building, functional laboratory, communication network and continuous monitoring and evaluation which may vary with location (rural/urban facilities), it will be of interest to explore whether the location of health facilities will affect surveillance system at this level.

Relevant information regarding the implementation and evaluation of IDSR strategy at all levels is pivotal to success of disease surveillance in Nigeria. In the absence of such evaluation, the failure associated with the previous surveillance systems may be unavoidable.

In view of the uncertainties that IDSR is being implemented according to the National Technical guidelines for IDSR, 2002 and the Nigerian national policy formulated in the year 2005 and the paucity of information on its implementation in all health facilities of the country, it therefore becomes necessary to assess the performances of health facilities of IDSR implementation in the country. Hence, this study was carried out with the following objectives:

1.4 Objectives

1.4.1 Broad Objective:

To assess the knowledge and practice of disease surveillance and implementation of IDSR strategy by public and private health facilities in two selected local governments areas(LGAs) of Oyo State, Nigeria so as to obtain a true reflection of the current situations regarding the

implementation of the national IDSR strategy and help in informing interventional measures where and if necessary.

1.4.2 Specific Objectives

The specific objectives of this study are to:

1. Assess the knowledge of disease surveillance and IDSR of health workers in health facilities in Ibadan North and Ibarapa East Local Government Areas of Oyo State.
2. Assess the practice of disease surveillance in health facilities of Ibadan North and Ibarapa East Local Government Areas of Oyo State.
3. Evaluate the implementation of IDSR in health facilities in Ibadan North and Ibarapa East Local Government Areas of Oyo State.
4. Compare the knowledge of health workers on disease surveillance and IDSR in public and private health facilities in the two selected LGAs (Ibadan North and Ibarapa East LGAs)
5. Compare the practice of disease surveillance and implementation of IDSR in public and private health facilities in the two selected LGAs (Ibadan North and Ibarapa East LGAs)
6. Compare the knowledge of health workers on disease surveillance and IDSR in health facilities in the two selected LGAs (Ibadan North and Ibarapa East LGAs)
7. Compare the practice of disease surveillance and implementation of IDSR in health facilities in the two selected LGAs (Ibadan North and Ibarapa East LGAs)

CHAPTER TWO

REVIEW OF LITERATURE

2.1. What is Integrated Disease Surveillance and Response (IDSR)?

The Integrated Disease Surveillance Strategy (IDSR) is the system of disease prevention and control established by the World Health Organisation (WHO) Regional Committee for Africa for implementation by its member states in response to the ineffective and deficient implementation of various disease surveillance programmes being experienced in the continent as observed at the 48th session of the WHO Regional Committee for Africa in September 1998 in Harare, Zimbabwe. The Integrated Disease Surveillance and Response Strategy was designed to improve communicable disease surveillance and response in the Africa Region linking community, health facility, local government area (LGA) and the national level. It harmonizes all the pre existing vertical disease surveillance systems thereby providing information for a rational use of resources for disease control and prevention (FMOH, Nigeria, 2002, 2005).

Prior experiences with some disease elimination and eradication programmes have shown that disease control and prevention objectives are achieved only when the scarce resources are dedicated to improving the ability of health workers to detect the targeted diseases, obtain laboratory confirmation of the diseases, and use thresholds to initiate actions at the LGA level. Many intervention programmes put in place in the past have their respective disease surveillance systems which involve similar functions especially at the LGA and health facility levels often using the same structures, processes and personnel. The IDSR strategy is meant to coordinate and streamline these duplicated efforts such that scarce resources are not used to maintain

separate vertical activities but resources are combined to collect information from a single focal point at each level (FMOH, Nigeria, 2002, 2005).

In the Integrated system, the LGA is the focus for integrating surveillance functions. The LGA is strategic for this function because it is the first level in the health system expected to have full complement of permanent staff dedicated to all aspects of public health such as monitoring events in the communities, mobilisation for community actions, encouragement of national assistance and accessing regional resources for protection of the health of the local communities (FMOH, Nigeria, 2002, 2005).

The IDSR combines several activities into one integrated activity taking advantage of similar surveillance functions, skills, resources and target populations. The surveillance focal points at the LGA, State and national levels collaborate with the epidemic response committees at each level to plan relevant public health response actions and actively seek opportunities for combining resources (FMOH, Nigeria, 2002, 2005).

2.2. The Goals and Objectives of IDSR

2.2.1. The Goal

The goal of IDSR is to ensure good health of all Nigerians, through the provision of necessary framework and guidance for strengthening of skills, provision of resources, and the prevention, early detection and timely response to diseases and conditions that cause high rates of death, illness and disability .

2.2.2. The Broad Objective

The broad objectives of IDSR seeks to contribute to reduction of mortality, morbidity, and disability from diseases through accurate, complete, and timely information with respect to data gathering and transmission for effective control and prevention of communicable diseases in the country.(FMOH,Nigeria,2005)

2.2.3. Specific Objectives (FMOH, Nigeria, 2005)

These include:

1. Integrating multiple surveillance systems so that forms, personnel, and resources can be used more efficiently and effectively
2. Establish functional national disease surveillance system that is able to detect epidemics early enough for timely response.
3. Support the strengthening of surveillance data management and utilisation of information for disease control activities in planning, implementation, monitoring, and evaluation and mobilisation of resources at all levels.
4. Strengthen the capacity and involvement of laboratories in disease surveillance as well as establishing laboratory network for IDSR at federal, state and LGA levels.
5. Support the establishment of effective communication network for transmission of surveillance data and epidemiological information at all levels.
6. Support the training and retraining of health workers on IDSR at all levels using adapted training modules and inclusion of IDSR into the training curricula of health institutions.
7. Conduct continuous advocacy to policy and decision makers on at all levels to mobilise resources and support for IDSR activities.

8. Create awareness and mobilise the communities to promptly report suspected epidemic prone diseases and disasters to the local health authorities.
9. Ensure regular monitoring and supervision of IDSR activities at all levels.
10. Strengthen the surveillance data reporting mechanism of both public and private health institutions to the local health authorities.

2.3. The Priority Diseases Targeted in IDSR.

In June 2001, a steering committee on implementation of IDSR in Nigeria was constituted by the Federal Government of Nigeria. The terms of reference of this committee among others was to secure a consensus on a list of priority diseases for the country (FMOH,Nigeria,2005). Based on the outcome of the work of this committee, twenty one diseases were initially identified as priority diseases for surveillance and reporting in the country and these were further categorized into epidemic prone diseases, diseases targeted for elimination and eradication and other diseases of public health importance. However, with subsequent developments in the epidemiological pattern of diseases in the country, two additional diseases have been added to this initial list to make a total of twenty –three priority diseases currently (FMOH, Nigeria, 2002, 2005). These include:

Epidemic Prone Diseases

- Cholera, Measles, Cerebrospinal Meningitis, Viral Haemorrhagic fever(e.g. Lassa fever), Yellow fever and Highly Pathogenic Avian Influenza (HPAI)

Diseases Targeted for Eradication and Elimination

- Poliomyelitis, Dracunculiasis, Leprosy, Neonatal tetanus and Lymphatic Filariasis

Other Diseases of Public Health Importance

- Pneumonia in children less than 5 years, Diarrhoea in children less than 5 years, HIV/AIDS, Malaria, Onchocerchiasis, Sexually Transmitted Infections (STI), Severe Acute Respiratory Disease (SARD), Tuberculosis, Diarrhoea with blood (Shigella), Pertussis, Hepatitis B and Plague.

The Nigerian National Policy recommends that surveillance data from the LGA and health facilities are reported either immediately, weekly, monthly, quarterly or yearly as applicable following some sets of standard operating procedures. This guideline recommends two types of reporting namely immediate reporting and routine summary reporting (FMOH, Nigeria, 2002, 2005).

Immediate reporting is expected to be done for an individual case when an epidemic –prone disease is suspected and requires immediate notification. Case-based information are also reported for diseases targeted for elimination or eradication or when an action threshold is crossed. Some epidemic-prone diseases however have specific reporting requirements stipulated by the national guidelines. An example is the case of leprosy that is reported quarterly, cerebrospinal meningitis, cholera, yellow fever and measles cases and deaths are reported weekly.

The total number of cases and deaths seen in a given period (e.g. monthly, weekly) from priority diseases are routinely reported. These data are analysed and the results are used to monitor progress towards disease reduction targets, measure achievements of disease prevention activities in the LGA, and identify hidden outbreaks or problems so that early actions can be taken.

2.4. The Flow of Information in the IDSR system

2.4.1. Health facility level

The health facility is to collect information about the priority diseases based on the case definition of the disease. (See Appendix 8). The source of the data will be the out- patient and in-patient registers. The register should as a minimum include the date, name, patient number, sex, age, address, problem diagnosis, treatment and outcome (FMOH, Nigeria, 2002).

If a disease or condition that is either targeted for elimination, eradication or that has a high epidemic potential is suspected, it is reported immediately to the designated health worker in the health facility and at the LGA level (FMOH, Nigeria, 2002).

The health facility is to begin a response to the suspected out break and also obtain a laboratory confirmation through collection of laboratory specimen where applicable. The following data about the laboratory specimen should be documented: type of specimen, date obtained, date sent to laboratory, condition of specimen when received in the laboratory (FMOH, Nigeria, 2002).

The health facility is expected to complete information on epidemic prone diseases weekly using the weekly reporting form and forward same to the LGA while information on other priority diseases such as Tuberculosis and Leprosy should be completed monthly and quarterly and sent to the LGA.

Simple analysis is expected to be carried out at the level of the health facility to keep trend lines of priority diseases and also know when thresholds are reached for action (FMOH, Nigeria, 2002).

2.4.2. Local Government level

The local government surveillance offices are to collect completed forms from the health facilities, collate them periodically as applicable and send to the state level. Analyses are carried out at this level and logs of outbreaks reported by the health facilities are maintained including the intervention activities (FMOH, Nigeria, 2002, 2005).

2.4.3. State Government level

The data from various LGAs are to be compiled by the state DSN officer and forwarded to the Federal Epidemiology Division. Detailed analysis is expected to be carried out at this level and feedbacks given to the lower levels (FMOH, Nigeria, 2002, 2005).

2.4.4. The Federal Level

Data from all the states of the federation are to be compiled and analysed, interpreted, and used for action. The data are also to be disseminated to all the vertical programmes, partners and other stakeholders. Feedbacks should be given through the monthly newsletter and bulletin (FMOH, Nigeria, 2002, 2005).

2.5. The Strategies for the Implementation of IDSR

According to the National Policy on IDSR, the IDSR shall be implemented in phases at the community, health facility, LGA, State and Federal levels as outlined above in the section on flow of information utilizing the LGA as the lowest administrative unit within the national health

system. For the effective implementation of this system, the following strategies were outlined for necessary action (FMOH, Nigeria 2002, 2005).

a) Advocacy and Sensitization

Continuous advocacy shall be conducted for effective implementation of IDSR. This will be done to ensure the supports of policy makers, opinion leaders and partners through regular advocacy visits to these groups of people. Such visits shall be used for resource mobilization and funding for IDSR. In addition, sensitization workshops shall be carried out at all levels. The opinion leaders and leaders of thought at the community level, health professionals and other private professional bodies shall be sensitized to enlist their supports and participation in the implementation of IDSR.

b) Programme management and Coordination

A focal unit for IDSR shall be identified in all health facilities, LGA PHC department, State ministries of health and the Federal Ministry of Health and a focal person assigned to this unit at all levels. A multi agency coordinating committee shall be established to coordinate IDSR implementation at the LGA, State and Federal levels. The members of this committee shall include Program Managers of Priority diseases, partners and experts in public health especially in Epidemiology and Laboratory Science. The group shall serve in advisory capacity to the government and meet on quarterly basis to review and monitor IDSR activities.

c) Strengthening Communication Capacity

Basic communication apparatus shall be available at all levels. T minimum telephones (land, mobile), facsimile, high frequency radio and e mails should be made available at

LGAs, State and Federal levels. The federal, state, LGA IDSR units and the laboratory service offices are to be equipped with computers.

d) Capacity Building

A set of core trainers shall be established at the Federal Ministry of Health with partners who would be expected to conduct periodic training and re trainings of health workers program officers and IDSR focal persons at all levels, making use of the WHO generic IDSR training modules adapted for Nigeria. Trainings would be conducted using the training of trainers mechanisms. The core facilitators shall be utilized to provide technical supports for the states, LGAs, and health facilities training activities. The training will incorporate all aspects of disease surveillance, laboratory diagnosis, epidemic preparedness (EPR), and data management. Skill reinforcement supervisory visits and follow ups by the federal ministry of health shall accompany these trainings within eight weeks of completion. Pre service trainings for health workers shall be introduced to ensure sustainable IDSR implementation. The heads of medical and health training institutions shall be sensitized to include IDSR in their respective training curriculum.

e) Strengthening Data Management

A comprehensive data base of the 23 priority communicable diseases shall be developed by the National IDSR unit. The unit is also expected to provide data management guidelines for use at all levels. Standard case definitions of priority diseases shall be produced, and circulated to all implementing levels. Workshops shall be conducted to sensitize decision makers on the use of data generated for decision –making and policy formulation, Data will be disseminated through a two –way feedback process, such as monthly newsletter at all levels and a quarterly national bulletin of epidemiology at the

federal level. Surveillance officers at all levels shall be trained in data management, and partners shall be expected to provide technical and financial support for training and development of database and relevant software recommended by WHO. The states and LGAs will be linked to the national IDSR unit through internet and facsimile facilities to ensure rapid transmission of surveillance data.

f) Establishment of Sentinel Sites

Sentinel sites shall be established to promote active surveillance and to generate more detailed data disaggregated by sex, smaller age grouping, and classification for specific target diseases of public health significance, such as cholera, measles, poliomyelitis, cerebrospinal meningitis, viral hemorrhagic fever (Lassa fever), yellow fever, HIV/AIDs, malaria, diarrhoea diseases, acute respiratory infection, guinea worm, onchocerchiasis, tuberculosis and leprosy. The sentinel surveillance sites will be expected to function with IDSR. Data collection format, guidelines and manual will be developed for sentinel surveillance activity in collaboration with the various programmes or any other programme that wishes to establish one. At the sentinel sites, active case search of priority diseases shall be introduced and intensified.

g) Epidemic Preparedness and Response (EPR)

Epidemic Preparedness and Response Committee shall be established at all levels and strengthened where available. The committee shall meet on quarterly basis and whenever deemed necessary, with defined terms of reference, plan of action and operational guidelines. Rapid response teams equipped with adequate resources and logistics for rapid intervention shall be established at all levels. Adequate funds shall be provided to

secure Federal, State, and LGA contingency stocks of medicines, vaccines, and supplies and for the pre-positioning of emergency stocks, particularly in epidemic prone states.

There shall be constant updating of the existing epidemic management protocols and Standard Operating Procedures (SOPs) and these shall be made available to health personnel at all levels. Weekly reporting and collation of data on epidemic prone diseases by LGA shall be introduced to facilitate prediction of impending epidemics.

h) Strengthening Laboratories and Case Management

Laboratory networks shall be established for IDSR at States. Central and Reference laboratories and guidelines shall be developed for efficient laboratory services. Training of laboratory personnel shall be done on continuous basis to ensure regular availability of well trained and skilled manpower. There shall be in place mechanisms for prompt and proper disposal of laboratory wastes at the state and federal levels. Adequate mechanisms shall be available for communication with the LGAs for collection and transportation of specimens and feedback of results. There shall be creation of budget lines for public health laboratory services at the federal and state levels to ensure regular availability of reagents and other supplies. Reference laboratories shall be strengthened for confirmation of special pathogens and also act as quality control for state laboratories.

i) Case Based Surveillance.

When there is a suspected case of an epidemic prone disease or disease targeted for elimination, eradication, accelerated control or during an outbreak of these diseases, case based surveillance shall be conducted. Health workers shall conduct case based investigations to learn more about the specific disease patterns. Health workers shall use

the epidemiological case definition to identify suspected cases and proceed to line list the suspected cases by age, sex, vaccination status (where applicable) , home address and date of onset and take appropriate specimen for laboratory confirmation.

2.6. The Global Perspectives on Disease Surveillance

Disease surveillance and reporting are global phenomenon that are emphasised, practiced and promoted by both developing and developed nations of the world. The optimistic projections of a possible reduction in the risk of death for children under 5 years of age by nearly 50% in the baseline scenario between 2002 and 2030 and the drop in HIV/AIDS death to 3.7 million in 2030 are based on the assumptions of an increased prevention activities globally(Mathers and Loncar, 2006). The IDSR constitutes a major thrust in these speculated prevention activities especially in the developing world.

In recent years, there has been an increasing number of emerging infectious disease events of international concerns such as the severe acute respiratory syndrome (SARS) and the pandemic influenza A/HINI . In an attempt to improve bidirectional communication between the local governments and the international communities, the WHO inaugurated in 2000 the Global Outbreak Alert and Response Network (GOARN) (WHO, 2007). This serves as a global collaboration to consolidate technical supports for disease outbreak surveillance and response efforts. Similarly, the WHO's International Health Regulations (2005) were also revised to update surveillance capacity standards and mandate reporting of disease events that may constitute public health emergencies of international concerns (Fidler and Gostin, 2006).

As a follow up to these initiatives, Chan et al 2010 embarked on a global quantitative assessment of whether and how disease outbreak detection and communication process have changed over

time. The entire WHO public record of disease outbreak between 1996 and 2009 were analysed to characterize spatial-temporal trends in the timeliness of outbreak discovery and public communication of the outbreak relative to the estimated outbreak start date. There was an overall improvement in timeliness of outbreak discovery globally by 7.3% and public communication also improved by 6.2%. However, degree of improvements varied by geographical regions with the Western Pacific region only having a significant improvement in outbreak discovery and both this region and the Eastern Mediterranean regions having significant improvements in public communication. There were no demonstrable improvements with respect to these outcomes in the African region to which our nation belong.

Timeliness in reporting disease outbreaks to relevant health authorities is essential for effective public health responses. One of the key objectives of the IDSR is to ensure a timely disease notification. While there is no guideline proposed globally for choosing the reporting intervals of infectious diseases, the reporting interval of infectious disease is often determined as a time unit in the calendar regardless of the epidemiological characteristics of the disease. The translation of coarsely reported epidemiologic data into the reproduction number and clarifications of the ideal reporting intervals offering detailed insights into the time course of an epidemic had suggested that an ideal reporting interval is the mean generation time of the disease such that the ratio of cases in successive intervals can yield the reproduction number (Nishiura et al, 2010). This preposition perhaps is yet to become universally accepted. Reijn et al, 2011 had analysed the reporting data for six notifiable diseases between June 2003 and December 2008 from the Dutch national disease notification system and found that over this study period, many of these six notifiable diseases were not reported within two incubation periods and many were also reported more than three days after laboratory diagnosis were made. A suggestion of an increase in direct

reporting of laboratory diagnoses to relevant authorities was made as having the potential of improving the timeliness in responses. A similar study in Korean that analysed the timeliness of the national notifiable diseases surveillance systems in the country also recorded delays in the median time from disease onset to both registration at the local levels and notification to the national health authority. These delays were generally attributable to the time between disease onset and diagnosis (Yoo et al, 2011).

The completeness of communicable diseases reporting has become a great concern to stake holders in public health globally. Despite widespread use of communicable diseases surveillance data to inform public health interventions and control measures, the reporting completeness of notifiable diseases surveillance systems appeared incompletely assessed. A comprehensive study of reporting completeness of 53 diseases in 8 health care systems of North Carolina, USA between 1995-1997 and 2000-2006 revealed disease reporting completeness varying between 2% and 30% and an improvement over time. Disease specific reporting completeness proportions varied between 0% and 82% and were generally low even for diseases with great public health importance and opportunities for intervention (Sickbert-Berneth et al, 2011). The problem of under reporting has also been illustrated in the South East Asians countries of Thailand and Cambodia with the findings of Dengue fever national surveillance data significantly under recognizing the true burden of the disease (Wichmann et al, 2011). A study in an Irish district also showed an 18% missed notification between 1997 and 2002 largely due to hospital clinicians under-reporting (Brabazon et al, 2008). These studies underscore the global trend in under –reporting of notifiable infectious diseases. Efforts to improve completeness and timeliness of surveillance data on infectious diseases must therefore be part of a continuous

process to improve the overall quality of surveillance and response systems and avert global disease spread (WHO, 2006).

While reporting is expected to be done by all categories of health workers whether in the public or private settings, a study conducted among private doctors nationwide in Taiwan suggested a low reporting rate of 37.2% among this population of doctors. Reasons given for non compliance includes not wanting to violate patient privacy and the cumbersomeness of the reporting process (Tan H, et al 2009). Various strategies and measures are being employed at different locations to bring about improvements in level of compliance with reporting and ensure both completeness and timeliness. Some of these measures are the use of hospital discharge data which has demonstrated some usefulness with respect to certain diseases and none to others (Boehiner et al, 2011), widespread multimedia campaign to increase case ascertainment and establish communication channels and partnership (Gilberg, et al, 2011). This however, only brought about a short time improvement in rate of reporting among health professionals that was not sustained.

2.7. The Africa Experience in Literature

2.7.1. Trends of Major Disease Outbreak in the African Region

Communicable diseases remain a major health challenge in Africa causing significant burden of illness, mortality and morbidity. Kebede et al 2010 reviewed the major epidemics reported to the WHO/AFRO from 2003 to 2007 and found recurrent disease outbreaks as cholera, meningitis, yellow fever, malaria and dysentery. The re-emerging disease outbreaks of ebola and malburg hemorrhagic fevers and the emerging disease outbreak of avian influenza were noted as well.

More than 90% of the world ‘s reported cholera cases occur in Africa (Griffith, et al, 2006). There was a consistent report of cholera outbreak from 1998 from Benin, Ghana, Guinea and Togo. In 2006, 31 countries reported cholera epidemics to the WHO/AFRO, compared with only 24 countries in 2004. All these reported cases were laboratory confirmed. Although these trend showed an increase in the number of countries affected by cholera outbreak, the overall case fatality rate (CFR) was on a downward trend. This may be adducible to some improvement in the surveillance or response activities (WHO, 2008).

Dysentery has continued to be one of the major recurrent disease outbreaks in the African region with an increase in the number of countries reporting dysentery to the WHO/AFRO from three in 2003 to 23 in 2007. The most common isolate confirmed was *Shigella dysentriae* type 1(Sd1). The largest outbreak in West Africa occurred in the Southern part of Sierra Leone in 1999 with total number of cases of 4,218 and overall attack rates and case fatality rates of 7.5% and 3.1% respectively (Guerin et al, 2003).

Meningococcal meningitis is similarly endemic in most countries of Africa. The outbreak typically occurs during hot, dry and dusty conditions in areas with high population density. The epidemics tends to occur in a cycle of every four to seven years in countries along the ‘meningitis belt,’ including about 300 million people stretching from Senegal in the west to Ethiopia in the east and involving Nigeria as well (WHO/ICG). In the year 2003, 32 countries reported meningitis with 14 declaring epidemics. Nigeria was one of the most affected countries with 4,130 cases/401 deaths alongside other nations like Democratic Republic of Congo, Burkina Fasso, Niger, Uganda, Ghana, Ethiopia, Chad and Mali (WHO/ICG). Laboratory confirmation showed that Neisseeria meningitides serotype A was responsible in most countries while a few

countries like Burkina Fasso, Benin, Chad, Ghana, Niger, Nigeria and Mali had a mix of serotype A and W135.

Malaria related death is put at approximately one million yearly, out of which 90% occur in sub-Saharan Africa. This accounts for 10% of the continent's overall disease burden and 20% of mortality in children less than five years old (WHO/RBM). About 74% of African population lives in malaria highly endemic areas while 19% resides in malaria endemic prone areas. About 125 million Africans living in 20 countries are at risk of malaria epidemics and 5% of the cases may progress to severe malaria resulting in 10% case fatality (WHO, 2006). In 2003, three countries in Africa were severely affected by malaria epidemics. These were Ethiopia, Burundi and Kenya. The number of countries reporting malaria outbreaks increased from 3 in 2003 to 21 in 2006.

Measles is almost eliminated in most parts of the world, but it is still among the common epidemics contributing to high mortality and morbidity in sub-Saharan Africa especially among malnourished children (CDC, 2006). In 1998, an accelerated measles control strategy was introduced, built upon the acute flaccid paralysis (AFP) surveillance infrastructure and closely linked to IDSR principles. This undoubtedly has brought the disease burden to a low level in the region however, small and infrequent measles outbreak continues to occur due to low immunization coverage and gaps in surveillance activities (WHO/Measles, 2011). In 1999, approximately 871,000 deaths occurred from measles worldwide with 61% of these occurring in the sub-Saharan Africa. In 2006, 178 (6%) of the 2,923 WHO/AFRO districts reported measles outbreaks which spanned 29 countries. The most affected countries were DRC, Ethiopia, Tanzania and Nigeria with Nigeria recording 2,919 cases and 18 deaths.

Over the past decade, outbreaks of viral hemorrhagic fevers have become increasingly frequent, partially due to improved surveillance activities. Yellow fever is endemic in 33 countries in the African region among which 12 countries carry about 75% of the total disease burden and 89% of reported yellow fever outbreaks in the continent (Tomori, 2002). These countries are Burkina Faso, Cameroon, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Senegal, Sierra Leone and Togo. During 2006-2007, a total of 477 suspected cases of yellow fever were reported in the region with 32 deaths (CFR 7%) from 13 countries with seven countries having confirmed outbreaks. There was however concerns of gross underreporting of yellow fever in the region. Lassa fever is prevalent mainly in western Africa with estimated 300,000 to 500,000 cases occurring annually and about 5,000 deaths resulting. In 2004, Nigeria reported 43 cases of Lassa fever with 21 deaths while Sierra Leone reported 147 cases and 69 deaths. Three countries namely Nigeria, Liberia and Sierra Leone reported 88 cases in 2005 and 101 cases with 15 deaths in 2006 (WHO/Lassa fever, 2006).

In the African region, avian flu outbreaks have emerged in domestic birds in Benin, Burkina Faso, Cameroon, Cote d'Ivoire, Ghana, Niger, Nigeria and Togo. Influenza viruses have been found in wild waterfowl in Chad, Mali, Mauritania, Niger and Senegal. The first human case of H5N1 was recorded in January 2007 in Nigeria(Aman – Oloniyo,2007). The confirmation of H5N1 avian influenza in poultry is a reason for great concern that demands action (Pialoux, et al, 2007, WHO/AFRO, 2005).

2.7.2. Status of Integrated Disease Surveillance and Response (IDSR) in Africa Countries

Sow et al 2010 carried out a retrospective review of IDSR evaluation reports from eight African countries between October 2004 and September 2007 namely Cape Verde, Eritrea, Ethiopia, Gambia, Guinea Bissau, Lesotho, Malawi and Uganda. They found an overall proportion of 52% to 89% of health facilities having one or two personnel trained in IDSR. In these countries, the overall knowledge of health personnel about epidemic prone diseases ranged between 52% to 78%. These countries had at least 60% of health personnel in their districts trained in IDSR and the timeliness and completeness of data reporting were 70% and 92% respectively.

A self assessment survey was carried out among the 46 member states of the WHO Africa region in June, 2010 by the Center for Disease Control (CDC) to determine the progress with the implementation of the strategy in the region. Forty-three out of the 45 countries that responded were at varied levels of implementation (CDC, 2010). All the countries had designated national surveillance structure and had identified the priority diseases and conditions. Only 24 countries reported having an operations command and control centre to coordinate and monitor outbreaks and other public health emergencies. Of the 4,386 districts present in the 45 responding countries, 3,801(86%) were implementing IDSR strategy to some extent in the preceding 12 months to the evaluation. The critical gaps highlighted by this assessments were: absence of IDSR dedicated staff at district level in about 30% of the countries studied, lack of epidemic management committees in over 80% of the districts, absence of rapid response teams in over 50% of the districts and lack of logistic and communication capacities in a significant number of districts in the 45 countries (CDC, 2010).

Following the adoption of the IDSR by member nations of the WHO African region in 1998, Tanzania had a record of baseline data regarding disease surveillance and response between October and December 2003 and subsequently embarked on a follow-up data collection between January and March 2005 following introduction of the IDSR. It is noteworthy that this nation recorded improvements in several areas including timeliness and completeness of weekly and monthly reporting, district and facility analysis of disease surveillance data and in the use of data for monitoring and planning. The districts examined in this evaluation were able to sustain their good performance in outbreak management with little or no improvement. Communication with other sectors and sharing of resources were also good. However, it was noted that there was decline in outbreak preparedness and the use of appropriate reporting forms also require lots of improvements. There was also increased awareness about IDSR in more of the districts studied with improved data analysis which was unfortunately below international standards (USAID, 2006).

In the year 2007 in Nigeria, a group of researchers in the Northern part of the country had evaluated the emergency preparedness and the capability of a local government area to identify disease outbreaks comparing their findings to the recommendations of the year 2002 National Technical Guidelines on IDSR. Apart from the availability of a budget line for emergency response in the studied LGA, most of the other findings were rather alarming. There were no prepositioned drugs or vaccines, only 8% of staff was trained on IDSR, no use of thresholds or makers, no analysis of available data at the LGA level and both the timeliness and completeness of reporting were poor (Abubakar AA, et al 2010)The findings of these group of researchers were consistent with the observations of the forum of state epidemiologists in Nigeria as outlined in a communiqué issued by this body of professionals following their annual meeting at Enugu,

Nigeria in June 2007. They noted among several others that there was inadequate and untimely IDSR reporting nationwide, that the feedback mechanisms were poor and data management capacity at all levels was weak (Nigeria Forum of State Epidemiologist 2007). They also observed poor private health sector participation in disease surveillance, poorly equipped state public health laboratories and poor funding for IDSR at all levels.

While the paucity of published works in the public domain on the subjects of IDSR is noted in this country, it is hoped that the findings from this study will further contribute to the currently available body of knowledge of IDSR implementation in Nigeria.

CHAPTER THREE

METHODOLOGY

3.1. Study Area

The study took place between October 2007 and June 2008 in Ibadan North and Ibarapa East Local Governments Areas of Oyo State.

Oyo State was created in 1976 from the former Western State of Nigeria, and originally included Ọsun State, which was split off in 1991. The state is mainly inhabited by the Yoruba ethnic group who are primarily agrarian but have a predilection for living in high density urban centers. Ibadan is the capital city of Oyo State. The state is currently divided into 33 local government areas.

Oyo State covers approximately an area of 28,454 square kilometers. The Climate is equatorial, notably with dry and wet seasons with relatively high humidity. The dry season lasts from November to March while the wet season starts from April and ends in October. Average daily temperature ranges between 25 °C (77.0 °F) and 35 °C (95.0 °F), almost throughout the year.

3.2. Study Sites

The study sites included all health facilities (public and private) in Ibadan North and Ibarapa East Local Government Areas of Oyo State. Health Facility for the purpose of this study included all public and private facilities providing health care delivery excluding eye clinics, dental clinics, medical laboratories, traditional and alternative medicine facilities.

Ibadan North LGA:

Ibadan North Local Government Area is situated within the metropolis of Ibadan city with headquarters at Agodi. It has an area of 27 km² and a population of 306,795 at the 2006 census.Its largely inhabited by non-indigenes of Ibadan and the elites . The premier University, University of Ibadan and the Apex hospital in the city, University College Hospital, the polytechnic, Ibadan and many other institutions are located in this LGA. Various health organizations and health programme have offices located within this LGA, for example, WHO office, UNICEF, Roll back malaria programme.

Some priority diseases reported in this LGA include malaria, Diarrhea disease, measles, cholera, Tuberculosis, Neonatal Tetanus, HIV/AIDS, Dracunculiasis, Hepatitis B, Poliomyelitis (OYSMOH, 2008).

Ibarapa East LGA:

Ibarapa East Local Government has its headquarters in the town of Eruwa. It has an area of 838 km² and a population of 118,226 at the 2006 census.The people are predominantly arable farmers because the land is not good for cash crops. Cattle rearing is also common in the area. The towns and villages includes Eruwa, New Eruwa, Lanlate, Maya, Alapa, Igbodudu, Okolo.

Some priority diseases reported in this LGA include malaria, Diarrhea disease, measles, cholera, Tuberculosis, Neonatal Tetanus, HIV/AIDS, Oncocerciasis, Hepatitis B, Yellow Fever, Poliomyelitis (OYSMOH, 2008).

3.3. Study Population

These were the surveillance focal persons in the health facilities or the facility head or a designated staff where there was no focal person.

3.4. Study Design

A cross sectional study was carried out in the health facilities in Ibadan North (urban) and Ibarapa East (rural) LGAs, on the assessment of the implementation of the IDSR strategy using a validated semi- structured questionnaire to obtain information from a designated personnel in each health facility of the two LGAs.

3.5. Sampling size

A total sampling of all the health facilities in the selected LGAs was done.

3.6. Sampling Technique

Cluster sampling technique was used to select the study sites. The 33 local government areas of Oyo State were first divided into 2 strata of Urban and Rural/Semi Urban local governments. In this study, Rural LGA is defined as one located outside the city and towns while an urban LGA is one located within a city or town.

Subsequently, using the simple random sampling technique, one local government area each was selected from the two strata with Ibadan North and Ibarapa East LGAs emerging as the selected local government areas. All the health facilities in the selected LGAs were included in the study. A list of all health facilities (public and private) in these two LGAs were obtained from the Oyo

State Ministry of Health. The researcher and the research assistant inquired about the focal surveillance person in each health facility studied and such was interviewed. The facility head or a person designated by the facility head was interviewed instead where focal persons did not exist.

There were a total of 126 health facilities identified in Ibadan North LGA excluding laboratories, eye and dental facilities. Likewise, 19 health facilities were also identified in Ibarapa East LGA.

3.7. Instrument Design and Procedure for Data Collection

The study instrument was a semi structured questionnaire. Nearly all the questions were precoded with just a few open ended ones where respondents needed to make a list of certain items they were aware of. The questionnaire was developed from review of relevant literatures by the Federal Ministry of Health which are the Technical guidelines for integrated disease surveillance and response, May, 2002 and National policy on integrated Disease surveillance and response, September 2005. The questionnaire was face validated by an expert in the field of disease surveillance, two colleagues and senior epidemiologist.

The questionnaire was pre-tested in 10 health facilities in Ibadan East Local Government Area and the findings were used to modify the instrument before embarking on the data collection.

The data collection was carried out by the principal investigator and some trained research assistants. The training of the research assistants was done by the principal investigator. The focus of the training was on the research objectives and proper understanding of the research instrument. This was aimed at minimising variability.

The questionnaire was divided into the following sections:

Section A: Identification and Demographic data

These included the type and class of the facility, the occupation and designation of the respondent, the age and sex of the respondent and the years of experience of the respondent.

Section B: Knowledge about Disease Surveillance and IDSR

The information sought under this section were: Knowledge about where reports of priority diseases should be directed from health facility when made, Identification of epidemic prone diseases, diseases targeted for eradication and elimination, diseases of public health importance from lists of diseases. Other questions in this section were correct timing of reporting of diseases, awareness about IDSR and sources of information about IDSR, number of reportable diseases under IDSR in Nigeria, knowledge of reporting tools under IDSR and knowledge of case definition of cholera and poliomyelitis. These two diseases were used as case studies.

Section C: Attitude to IDSR

This section examined the opinion of the respondent about IDSR and their view of the process (whether cumbersome, easy or enjoyable), whether they think IDSR has helped reduce burden of priority diseases or not, and whether or not they need more information about IDSR.

Section D: Implementation of IDSR at the facility

The information sought in this section includes:

- Whether or not priority diseases are reported from the facility and who they reported to.
- The types of forms used.
- List of 5 commonest priority diseases reported, dates when the last 3 reports were sent and the duplicate of sent forms were requested for verification.
- Availability of a list of communication apparatus, clinical register for keeping records of diseases in the facility.
- whether or not analysis are done at the facility ,
- existence of a focal person at the facility,
- attendance at trainings in previous year and who organized such trainings,
- availability of copy of the national guidelines for IDSR in Nigeria at the facility
- compliance with standard case definitions in making diagnosis,
- regularity of supply of IDSR reporting forms and sources of supply
- Availability of outbreak coordinator in the facility
- Availability of immunization services
- Access to a functional laboratory
- Receipt of information bulletin from the LGA
- Regularity of supervisory visits from LGA surveillance units and record keeping .
- Display of line trends of priority diseases,

Section E: Occurrence of Epidemics and Response.

This section found out if any incidence of epidemic was recorded in the previous year, the steps that were taken in such instance and the difficulties encountered. Also it inquired about the supplies set aside or available for collecting specimen.

(See Appendix 1 for the copy of the questionnaire).

Document Review: Where applicable, relevant documents or records were verified, for example, copies of previously sent reporting forms, clinical register for recording diseases seen, health facility analysis book.

3.8. Statistical Analysis

All information collected from each respondent was entered into an IBM compatible computer and analysed using commercially available statistical package SPSS version 16.0.1. Continuous variables were summarised using means (standard deviation), and median when appropriate and categorical variables as proportions. The responses to some selected variables assessing knowledge and practice of disease surveillance and IDSR implementation were categorised to 'correct' and 'incorrect' and these were compared between the public and private health facilities, the classes of the facilities and the two LGAs. Comparisons of categorical variables were done using chi square and means of continuous variable using the student's t- test at $p \leq 0.05$.

Every correct or appropriate response to each of the variables in the questionnaire assessing the knowledge of disease surveillance, disease surveillance practice and IDSR implementation was allotted one mark (1) while all other responses (either wrong/ inappropriate or "don't know") were allotted zero mark (0). For each of these aspects examined, a total score was computed to make the respective composite scores. The knowledge of disease surveillance score was generated by summing up the scores to question numbers 12 to 40 on the questionnaire giving a maximum score of 29. The surveillance practice score was the sum of scores of questions

58,59,67,68,69 and 1 mark for any correct answer to questions 63-66 in the questionnaire. These summed up to a maximum of 6 marks. The IDSR Implementation score was a maximum of 13 marks derived from the sum of the scores of questions 70, 71, 74,75,76,78,79,82,84,85,87,88 and 89.

The frequencies and cumulative frequencies of each of the composite scores were generated from which inferences on level of knowledge or practice of the study population for each aspect were deduced. Similarly, these composite scores were used in carrying out bivariate analysis (student's 't' test and chi square) to compare the public and private health facilities as well as urban and rural settings. All statistical tests were carried out at 5% level of significance.

3.8. Ethical Considerations

An approval to carry out the study in the two local government areas was obtained from the Oyo State Ministry of Health Research and Ethics Committee. (see Appendix 2)

The privacy of the respondents and confidentiality was guaranteed by allowing for anonymity of responses. Participation was absolutely voluntary with verbal consent obtained from institution and individuals before administering the questionnaire.

This study help create awareness about IDSR among respondents in the studied health facilities and the information generated from this study has the potential to elicit actions and policies which will improve surveillance activities at this level and hence, reducing the burden of communicable diseases.

CHAPTER FOUR

RESULTS

4.1. Demographic Structure of Studied Sites and Population

There were a total of 145 health facilities identified in the two study LGAs of which 132 participated making a response rate of 92.3%. Nine facilities in Ibadan North LGA declined participation while 4 facilities in Ibarapa East LGA were not studied as well, out of which 2 were private facilities that were no longer in existence and 2 health posts with non – availability of the designated personnel during the study period.

The one hundred and thirty-two health facilities studied comprised of 30 public (22.7%) and 102 private (77.3%) facilities as shown in Table 1. There were 117(88.6%) health facilities from Ibadan North LGA(urban) and 15(11.4%) from Ibarapa East LGA (rural).

Table 1: Distribution of Health Facilities Studied.

Study Site	Facility Type		
	Public n(%)	Private n(%)	Total n(%)
Ibadan North LGA	18(13.6)	99(75.0)	117(88.6)
Ibarapa East LGA	12(9.1)	3(2.3)	15(11.4)
Total	**30(22.7)**	**102(77.3)**	**132(100.0)**

The respondents were predominantly females; 94(71.2%). The mean age of the respondents was 39.9(9.6) years with a mean duration of work experience of 8.5(7.3) years.

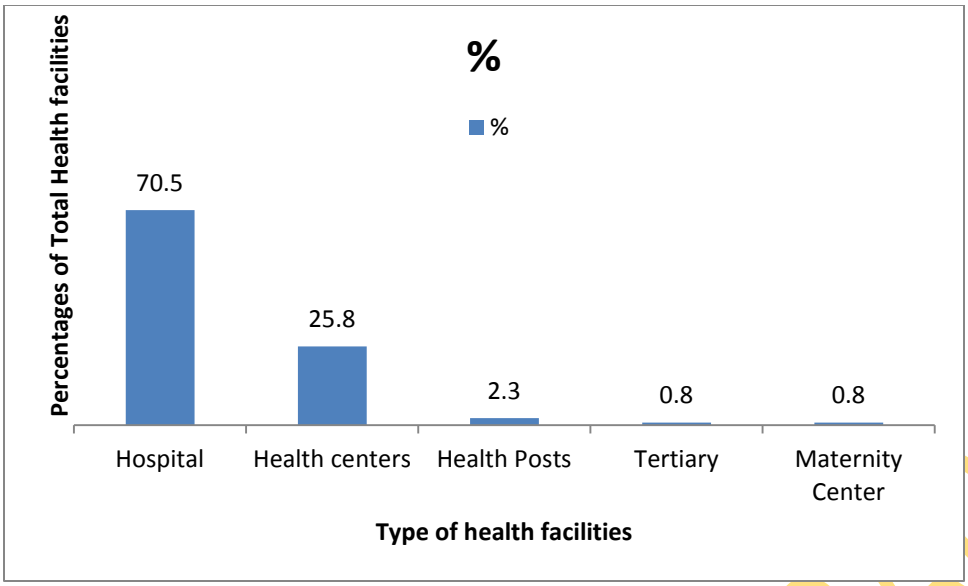

Figure 1: Distribution of the type of health facilities studied.

The health facilities studied included 1(0.8%) tertiary hospital, 93(70.5%) secondary hospitals, 34(25.8) health centres, 3(2.3%) health posts and 1(0.8%) maternity centre.

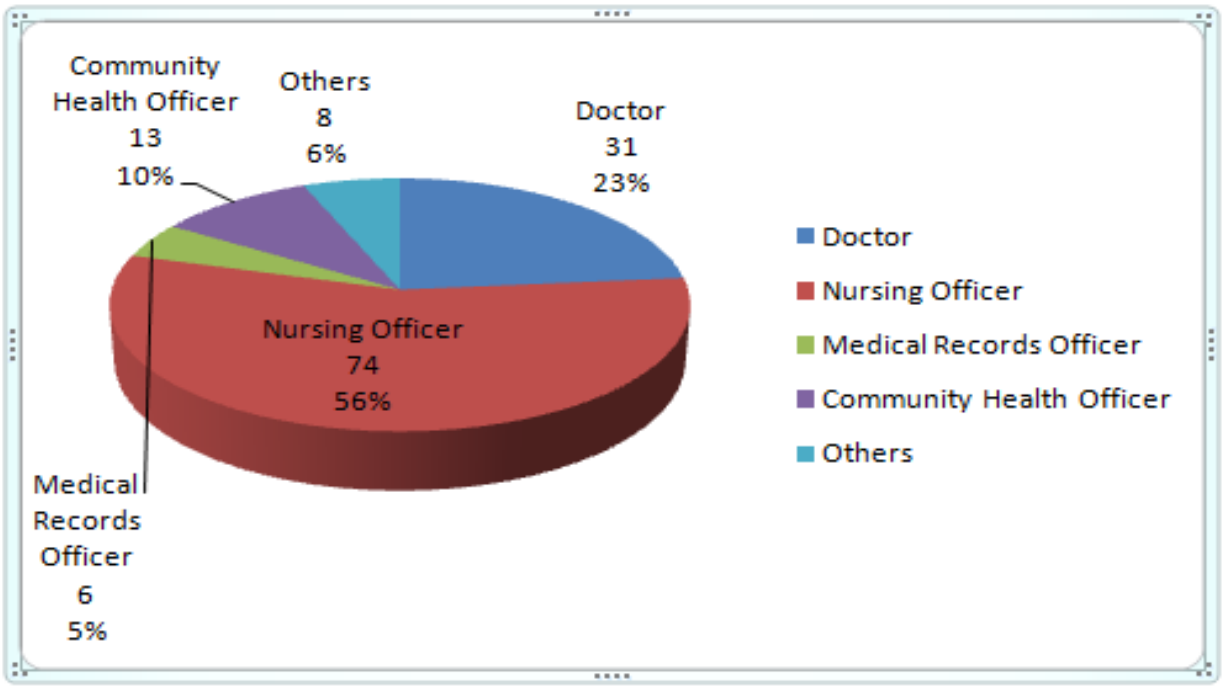

Figure 2: Distribution of the Categories of Respondents.

The distribution of the categories of respondents is shown in Figure 2. Nursing officers constituted most of the respondents; 74(56.1%), followed by doctors; 31(23.5%).

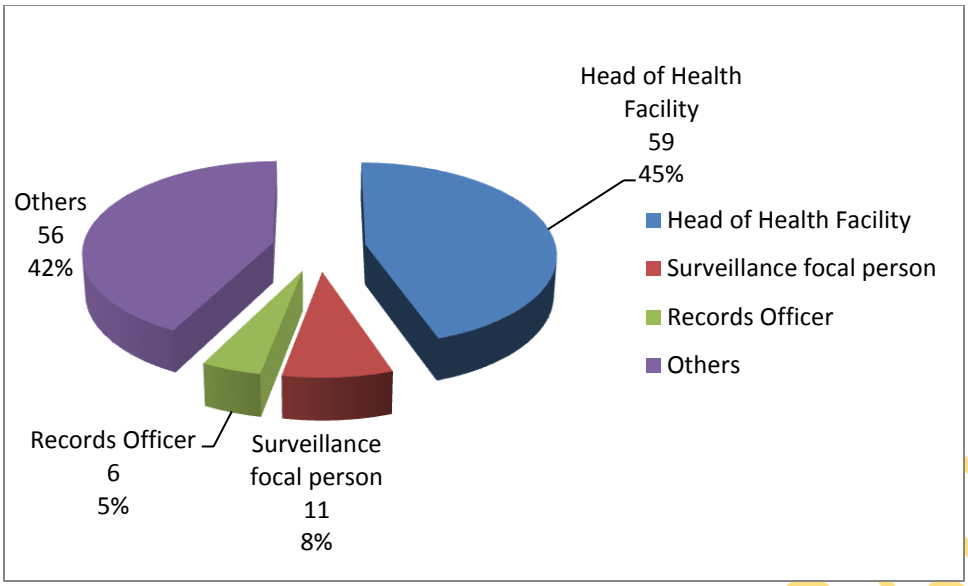

Figure 3: Distribution of the Designation of Respondents.

The various heads of the facilities studied were in the majority of respondents; 59(44.7%). Surveillance focal person were the respondents in only 11(8.3%) facilities where they existed. The other respondents are as shown in Figure 3.

4.2. Knowledge of Disease Surveillance

The appropriate knowledge of where reports of priority diseases should be directed (LGA PHC department) was demonstrated by 73 (55.3%) of the respondents. Other inappropriate response and the frequencies of the responses are as shown in Table 2 below.

The knowledge of epidemiologic classifications of diseases as demonstrated by the respondents are shown in Tables 3 and 4 respectively. Cholera was recognised as epidemic prone disease by 111(84.1%) of the respondents, 102(77.3%) for measles and only 28(21.2%) for Highly Pathogenic Avian Influenza-Human. Only 26(19.7%) recognised that poliomyelitis is not classified under epidemic prone disease and 74(56.1%) recognised that malaria is not classified as epidemic prone.

Neonatal Tetanus was recognised correctly as a disease targeted for elimination or eradication by 102(77.3%) respondents while 106(80.3%) and 121(91.7%) recognised Leprosy and Poliomyelitis as diseases targeted for elimination and eradication respectively.

Table 2: Distribution of Knowledge of Respondents about Destinations to which Priority Diseases Reports should be directed.

Destination	Number (Percentages)
FMOH	27(20.5)
NHPCDA	13(9.8)
HMB	12(9.1)
Statistics office	2(1.5)
LGA PHC Department	73(55.3)
Others	5(3.8)
Total	**132(100.0)**

FMOH=Federal Ministry of Health, NPHCDA=National Primary Health Care Development Agency, HMB=Hospital Management Board, PHC=Primary Health Care, LGA= Local Government Area.

Table 3: Knowledge of Classification of Diseases to Epidemic Prone and Those Targeted for Eradication and Elimination

	Yes n(%)	No n(%)	Don't Know n(%)
Epidemic Prone Diseases (n = 132)			
Cholera	111(84.1)	15911.4)	6(4.5)
Measles	102(77.3)	21(15.9)	9(6.8)
Poliomyelitis	92(69.7)	26(19.7)	14(10.6)
Malaria	44(33.3)	74(56.1)	14(10.6)
HPAI-Human	28(21.2)	41(31.1)	63(47.7)
Diseases Targeted for Eradication and Elimination (n =132)			
Neonatal Tetanus	102(77.3)	12(9.1)	18(13.6)
Leprosy	106(80.3)	11(8.3)	15(11.4)
Malaria	81(61.4)	45(34.1)	6(4.5)
Poliomyelitis	121(91.7)	5(3.8)	6(4.5)
HIV/AIDS	103(78.0)	21(15.9)	8(6.1

Tuberculosis was recognised correctly by 108(81.8%) as a disease classified as of public health importance while 102(77.3%) and 93(70.4%) correctly recognised diarrhoea diseases and dysentery diseases in this category. Only 21(19.9%) and 20(15.25) recognised schistosomiasis and cerebrospinal meningitis as not belonging to this category. (See table 4)

Table 4: Knowledge of Classification of Diseases as of Public Health Importance

	Yes n(%)	No n(%)	Don't Know n(%)
Diseases of Public Health Importance			
Schistosomiasis	89(67.4)	21(19.9)	22(16.7)
Tuberculosis	108(81.8)	9(6.8)	15(11.4)
Diarrhoea diseases	102(77.3)	17(12.9)	13(9.8)
Dysentery diseases	93(70.4)	21(15.9)	18(13.6)
Cerebrospinal meningitis	75(56.8)	20(15.2)	37(28.0)

Table 5 shows the knowledge of respondents about the appropriate timing of reporting of priority diseases. One hundred and one (76.5%) of the respondents recognised the outbreak of any disease as those for immediate reporting and 107(81.1%) mentioned for yellow fever. Only 54(40.9%) were aware that cholera is for weekly reporting and 71(53.8%) demonstrated correct knowledge of tuberculosis as a disease for monthly reporting. The pattern of responses to other diseases evaluated for knowledge of appropriate timing of reporting are as shown in the table 5.

Table 5 : Knowledge of Timing of Priority Diseases Reporting

Timing of Disease Reporting	Yes n (%)	No n (%)	Don't Know n (%)
Diseases for Immediate Reporting			
Outbreak of any Disease	101(76.5)*	21(15.9)	10(7.6)
Cholera	125(94.7)	2(1.5)*	5(3.8)
Yellow fever	107(81.1)*	16(12.1)	9(6.8)
A case of Measles	93(70.5)	32(24.2)*	7(5.3)
Diseases for Weekly Reporting			
Cerebrospinal meningitis	56(42.4)*	30(22.7)	46(34.8)
Cholera	54(40.9)*	53(40.2)	25(18.9)
Lassa fever	40(30.3)*	55(41.7)	37(28.0)
Yellow fever	46(34.8)	56942.4)*	30(22.7)
Diseases for Monthly Reporting			
Hepatitis B	77(58.3)*	21(15.9)	34(25.8)
Pertusis	69(52.3)*	26(19.7)	37(28.0)
Tuberculosis	71(53.8)*	29(22.0)	32(24.2)
Plague	41(31.1)	23(17.4)*	68(51.5)
Neonatal Tetanus	56(42.2)	38(28.8)*	38(28.8)

*** Correct Response**

4.3. Comparisons of Knowledge of Disease Surveillance between the categories of Respondents

Some of the indices of knowledge of diseases surveillance evaluated were compared between the respondents with respect to the types, classes and locations of their health facilities.

Table 6 shows the comparisons of the knowledge of respondents about where priority diseases reporting should be directed between the public and private facilities, the levels of care and the two local government areas respectively. More respondents in the public health facilities (73.3%) demonstrated correct knowledge than the private facilities (50.0%), $X^2 = 5.106$, df = 1, p = 0.024. Similarly, the proportions of respondents in Ibarapa East LGA (rural) with correct knowledge of where reporting should be directed (86.7%) were more than those in Ibadan LGA (51.3%), p = 0.009.

Table 7 compared the correct knowledge of respondents about cholera as an epidemic prone disease. No significant difference existed in the knowledge of respondents between the private and public health facilities, the levels of care of the facilities as well as between the two LGAs, p > 0.05.

The comparisons of the knowledge of respondents were similarly shown with respect to polio as a disease for eradication in Table 8 and Yellow fever as a disease for immediate reporting in Table 9 respectively. No significant difference existed in the knowledge of respondents between the public and the private health facilities, between the levels of care and the two LGAs with respect to these two parameters, p > 0.05.

Table 6: Comparisons of Knowledge of where priority diseases reporting is directed by facility type and location.

Variables	Knowledge				
	Correct	Incorrect			
	n (%)	n (%)	X^2	df	p value
Type of Facility					
Public	22(73.3)	8(26.7)	5.106	1	0.024
Private	51(50.0)	51(50.0)			
Class of Facility					
Tertiary	3(50.00	3(50.0)	1-934	4	0.748
Secondary/Hospitals	46(52.3)	42(47.7)			
Health Centre	21(61.8)	13(38.2)			
Health Posts	2(66.7)	1(33.3)			
Maternity Centre	1(100.0)	0(0.0)			
Location of Facility					
Ibadan North LGA	60(51.3)	57(48.7)	6.734	1	0.009
Ibarapa East LGA	13(86.7)	2(13.3)			

Table 7: Comparisons of Knowledge of Cholera as an Epidemic Prone Disease by facility type and location.

Variables	Knowledge				
	Correct	Incorrect			
	n(%)	n(%)	X^2	df	p value
Type of Facility					
Public	27(90.0)	3(10.0)	1.36	1	0.712
Private	84(87.5)	12(12.5)			
Class of Facility					
Tertiary	6(100.0)	0(0.0)	2.570	3	0.463
Secondary/Hospitals	75(89.3)	9(10.7)			
Health Centre	27(81.8)	6(18.2)			
Health Posts	3(100.0)	0(0.0)			
Location of Facility					
Ibadan North LGA	98(88.3)	13(11.7)	0.033	1	0.856
Ibarapa East LGA	13(86.7)	2(13.3)			

Table 8: Comparisons of Knowledge of Poliomyelitis as a Disease Targeted for Eradication by facility type and location.

Variables	Knowledge				
	Correct n(%)	Incorrect n(%)	X^2	df	p value
Type of Facility					
Public	28(93.3)	1(3.3)	0.158	2	0.924
Private	93(91.2)	4(3.9)			
Class of Facility					
Tertiary	6(100.0)	0(0.00)	2.771	8	0.948
Secondary/Hospitals	81(92.0)	4(4.5)			
Health Centre	30(88.2)	1(2.9)			
Health Posts	3(100.0)	0(0.0)			
Maternity Centre	1(100.0)	0(0.0)			
Location of Facility					
Ibadan North LGA	107(91.5)	5(4.3)	0.814	2	0.666
Ibarapa East LGA	14(93.3)	0(0.0)			

Table 9: Comparisons of Knowledge of Yellow fever as a Disease for Immediate Reporting by facility type and location.

Variables	Knowledge				
	Correct n(%)	Incorrect n(%)	X^2	df	p value
Type of Facility					
Public	24(80.00	6(20.0)	0.28	1	0.866
Private	83(81.4)	19(18.6)			
Class of Facility					
Tertiary	5(83.3)	1(16.7)	1.187	4	0.880
Secondary/Hospitals	70(79.5)	18(20.5)			
Health Centre	29(85.3)	5(14.7)			
Health Posts	2(66.7)	1(33.3)			
Maternity Centre	1(100.0)	0(0.0)			
Location of Facility					
Ibadan North LGA	94(80.3)	23(19.7)	0.346	1	0.556
Ibarapa East LGA	13(86.7)	2(13.3)			

4.4. Knowledge of Reporting forms and Tools used in IDSR

The knowledge of the respondents about the reporting forms and tools used in IDSR is as presented in Table 10 below. The majority of the respondents (over 90%) were unaware of the use of all the forms and tools evaluated. Only a small percentage responded correctly to the use of the forms for IDSR namely IDSR 001a (6.1%), IDSR 001b (7.6%), IDSR 001c (7.6%), IDSR 002(9.1%) and IDSR 003(9.1%) respectively.

The percentage awareness of correct IDSR reporting forms and tools were compared between the private and public facilities in Table 11. There was no difference between the knowledge of respondents in the two categories of health facilities, $p > 0.005$.

Table 10: Knowledge of Reporting forms and Tools used in IDSR

Type of Data form/Tool	Yes n(%)	Don't Know n(%)
DSN 001	12(9.1)	120(90.9)
DSN 002	11(8.3)	121(91.7)
IDSR 001a	8(6.1)	124(93.9)
IDSR 001b	10(7.6)	122(92.4)
IDSR 001c	10(7.6)	122(92.4)
IDSR 002	12(9.1)	120(90.9)
IDSR 003	12((9.1)	120(90.9)
Line list	10(7.6)	122(92.4)

Table 11: Comparisons of Percentage Awareness of IDSR Reporting Tools Between the Public and Private Health Facilities Studied.

Forms/Tool	Public n(%)	Private n(%)	X^2	Df	p value
IDSR 001a	3(27.3)	5(21.7%)	0.127	1	0.722
IDSR 001b	3(25.0)	7(30.4)	0.114	1	0.735
IDSR 001c	3(25.0)	7(30.4)	0.114	1	0.735
IDSR 002	3(27.3)	9(40.9)	0.589	1	0.443
IDSR 003	4(36.4)	8(36.4)	0.000	1	1.000
Line List	2(16.7)	8(34.8)	1.268	1	0.260

4.5. Knowledge of Case Definitions of Diseases

The proportions of respondents with correct knowledge of the case definitions for cholera and poliomyelitis in the various categories of respondents are as shown in Tables 12 and 13 respectively. The percentages with correct knowledge of case definitions of the two selected diseases were generally low in the population studied. More than 80% of respondents do not know the correct case definition of cholera and more than 90% do not know that poliomyelitis should be reported in any child below 15years of age with acute flaccid paralysis. There existed no difference between the knowledge of the various categories, P>0.005.

Table 12: Comparisons of Knowledge of Cholera Case Definition by facility type and location.

	Knowledge				N = 132
Variables	**Correct**	**Incorrect**			
	n(%)	**n(%)**	**X^2**	**df**	**p value**
Type of Facility					
Public	6(20.0)	24(80.0)	0.990	1	0.320
Private	13(12.7)	89(87.3)			
Class of Facility					
Tertiary	3(50.0)	3(50.0)	7.105	4	0.130
Secondary/Hospitals	11(12.5)	77(87.5)			
Health Centre	5(14.7)	29(85.3)			
Health Posts	0(0.0)	3(100.0)			
Maternity Centre	0(0.0)	1(100.0)			
Location of Facility					
Ibadan North LGA	17(14.5)	100(85.5)	0.15	1	0.901
Ibarapa East LGA	2(13.3)	13(86.7)			

Table 13: Comparisons of Knowledge of Case Definition of Poliomyelitis

Variables	Knowledge				N = 132
	Correct n(%)	Incorrect n(%)	X^2	df	p value
Type of Facility					
Public	3(10.0)	27(90.0)	1.098	1	0.304
Private	5(4.9)	97(95.1)			
Class of Facility					
Tertiary	0(0.0)	6(100.0)	1.123	4	0.891
Secondary/Hospitals	5(5.7)	83(94.3)			
Health Centre	3(8.8)	31(91.2)			
Health Posts	0(0.0)	3(100.0)			
Maternity Centre	0(0.0)	1(100.0)			
Location of Facility					
Ibadan North LGA	6(5.1)	111(94.9)	1.572	1	0.210
Ibarapa East LGA	2(13.3)	13(86.7)			

4.6. The Composite Scores for Knowledge of Disease Surveillance.

Overall mean knowledge of disease surveillance score was 16.1± 4.1. There was no difference between the mean knowledge score in the public (15.2 ± 3.4) and private (16.4 ± 4.2) facilities, t=-1.421,p=0.158 as well as between the two LGAs; Ibadan North(16.3±4.1) and Ibarapa East (14.5±3.4),t=1.687,p=0.094 .

4.7. Surveillance Practice

The overall score for mean disease surveillance practice was 2.7±1.4. There was no difference in the surveillance practice score in public facility 2.8(1.5) and private facility; 2.7(1.5), t=0.364,p=0.717. Likewise the surveillance practice score did not differ between Ibadan North LGA; 2.7(1.5) and Ibarapa East LGA; 2.3(1.2),t=1.181, p=0.240.

4.8. IDSR Implementation Score

The overall median IDSR implementation score was 1.00 (IQR=2) .The median IDSR implementation score was significantly higher in public facilities 3.00 (min 0.00, max 11.00) compared with 1.00 (min 0.00, max 11.00) in the private facilities, p = 0.006. No difference existed in the median implementation scores between Ibadan North, 1.00(min 0.00, max 11.00) and Ibarapa East, 2.00 (min 0.00,max 7.00) LGAs.

4.9. Surveillance Focal Person

Surveillance focal persons existed in only 11 facilities (8.3%). Mean scores for pre-existing surveillance practice where focal persons existed was 3.5±1.5 compared with 2.6±1.4 where none existed (p = 0.038). Median IDSR implementation scores in facilities with surveillance

focal person was 3.00 (min 1.00, max 11.00) and 1.00 (min 0.00, max 11.00) where none existed ($p = 0.006$). See Table 14 below.

Table 14: Comparisons of the Performances of Health Facilities with Surveillance Focal Persons and Those Without.

Parameters	Health Facilities With Focal Persons	Health Facilities Without Focal Persons	t value	p value
Mean Knowledge Scores	15.6(4.7)	16.2(4.0)	- 0.413	0.680
Mean Practice Score	3.5(1.5)	2.6(1.4)	2.093	0.038
Median IDSR Implementation score	3.00(IQR=2)	1.00(IQR=2)		0.006

4.10. Appropriateness and Timeliness of Reporting

Of the 132 health facilities studied, 26 (19.7%) facilities mentioned they reported priority diseases. These included 17 facilities in Ibadan North LGA (14 Public, 3 Private) and 9 facilities

in Ibarapa East LGA; (8 public and 1 private). Following verification of claims by checking relevant records according to standard guidelines, only 2 facilities (1.5%) were established to be practicing IDSR both timely and appropriately. These were a public health facility in Ibadan North LGA and a private health facility in Ibarapa East LGA.

The various forms being used by the facilities that claimed to be reporting are as shown in Table 15. The most frequently used reporting form was AFP 003(6.8%) followed closely by IDSR 003 (6.0%); 80.3% of the facilities had no reporting form/tool in use.

Table 15. Distribution of Types of Forms/Reporting Tools in use in the Health Facilities

Types of Forms/Tools	Frequency(%)
None	106(80.3)
AFP -003	9(6.8)
IDSR 003	8(6.0)
NHMIS	5(3.8)
Monthly surveillance Report on malaria	3(2.3)
Weekly measles case form	3(2.3)
DSN 001 and DSN 002	2(1.5)
Infectious diseases notification forms	2(1.5)
M&E forms	2(.5)
TBL forms	1(0.8)
Plane sheet of paper	1(0.8)

4.11. Disease Outbreak Preparedness

The indices of disease outbreak preparedness studied revealed that there was no record or evidence of outbreak preparedness in any of the health facilities studied during this study period.

4.12. Training and Logistics Issues

Of the 132 respondents, only 7(5.3%) have had a training on IDSR in the one year preceding the period of the study**.** The trainings were said to have been organised by the Local Government PHC unit and the State Ministry of Health. Only 4 facilities (3.0%) reported having a copy of the National Technical Guidelines on IDSR but none of them were available for verification.

CHAPTER FIVE

DISCUSSION

5.1

The response rate of 92.3% obtained in this study is considered a good one. The centers that did not participate did not do so either as a result of unwillingness to participate or non availability of designated personnel. The rural health posts are located in very remote areas of the local government with attendant difficulties of assess for personnel who visits on selected days of the week. These personnel are supposed to be transported by the LG but in many instances vehicles are not available. (Verbal report). Perhaps, if the government will consider making provisions for the mobility of health staffs working at such locations, there will be a corresponding positive effect on their respective availability and the services rendered.

The health facilities in the LGAs were predominantly private facilities and were mostly within the urban settings of Ibadan North LGA. This underscores the importance of carrying along the private health facilities and professionals in all health programmes and initiatives of public health significance.

The respondents were mostly females. This perhaps was a reflection of the preponderance of nursing officers among the respondents. Nursing has being known as a female dominated profession traditionally in most parts of the world. Of the 2.1 million registered nurses in the United States of America, only about 1.5% are men. (Wikipedia,2012). Burt, 1998 had reported a bias against men in the nursing profession.

The designation of the respondents revealed that about 87% were constituted by the head of the facilities and other categories of members of staff. A surveillance focal person which is supposed to be mandatory for all health facilities in the country by the IDSR policy and guidelines for implementation only existed in 11 facilities constituting just 8.3%. This is a far cry from the desired level of compliance of all facilities having a focal person. The CDC, 2010 had reported that over 30% of health districts in the African WHO region comprising 46 countries lack the existence of a focal surveillance person. This trend requires decisive actions towards improvements.

The knowledge of respondents about disease classification was good. About 80% recognised cholera as epidemic prone disease, over 77% recognised measles as epidemic prone disease as well. Sow, et al, 2010 in a report of IDSR evaluation from eight African countries (Nigeria not included) had reported a 52% to 78% level of knowledge of health personnel about epidemic prone diseases. While the report by Sow, et al, 2010 was not exactly the same as the finding in this study as it took into consideration the overall knowledge of epidemic prone diseases as against single disease entities in this study, the knowledge demonstrated remains good overall.

Similarly, a good knowledge of diseases targeted for elimination and eradication by the respondents was demonstrated with over 77% and over 80% respectively recognising Neonatal Tetanus and Leprosy correctly in this category. The responses to the other categories of disease classification evaluated reinforced the findings of a good knowledge of disease classifications.

A good number of the respondents also demonstrated correct knowledge of the appropriate timing for reporting of specific priority diseases. Outbreak of any disease was appropriately recognised for immediate reporting by over 76% of the respondents. However, as good as these

responses appeared, there were some knowledge gaps revealed. An example includes the inappropriate recognition of a case of cholera for immediate reporting by over 94% of the respondents. Such pockets of knowledge gaps are noticed in the overall results and this underscores the importance of a structured training programme for all personnel involved so as not to leave such important activities to guess works. Available reports on timeliness of disease reporting globally suggests delays in practice (Yoo, et al, 2011, Reijn, et al, 2011). A demonstration of a good knowledge of timing of reporting does not necessarily translated to actual practice. Despite this good knowledge of timing reported, only two facilities in this study constituting 1.5% were established to be practicing timely reporting as at the time of data collection. This was apparently poorer than the delays reported from other parts of the world as stated earlier.

The health personnel in the public facilities demonstrated better knowledge that their counterparts in the private facilities. Perhaps, this is due to the fact that the majority of respondents in the public facilities are in the Primary Health Centre which is under the direct supervision of the LG who are responsible for training and also constitute the first tier of surveillance activities (FMOH, Nigeria, 2002,2005) . The impacts of the LG might have been better felt by these public facilities. Similarly, respondents in Ibarapa East LGA had better knowledge of destination of priority diseases report than those in the Ibadan North LGA. A similar explanation may also be advanced here as most of the facilities in Ibarapa East LGA are public health facilities.

It is worth noting that neither the type of health facilities, the level of care (class) nor the location of the facilities influenced the knowledge of the respondents about the epidemiologic classification and timing for reporting of some diseases evaluated. This suggests that there was

no difference in the knowledge of personnel about some aspects of disease surveillance with respect to the types, classes and location of their facilities and all health personnel concerned will require similar interventions in these areas of knowledge gaps.

Another identified knowledge gap in disease surveillance among the study population was the poor knowledge of the reporting forms and tools demonstrated by the respondents. Those who do not know about practically all the forms evaluated were consistently over 90%. This underscores the deficiencies in training, supervision and supplies. The gross deficiencies in the knowledge of forms and tools cut across both the public and the private health facilities. Furthermore, this study also revealed among the very few facilities where reporting tools were available that a good number of the vertical programmes forms were still in use. This was in defeat of a cardinal objective of the IDSR that seeks to integrate the relevant vertical programmes with the view of maximising the use and benefits of scarce public resources. It is hoped that this anomaly will be corrected at the appropriate levels of policy making and implementation.

The respondents also demonstrated poor knowledge of case definitions of cholera and poliomyelitis. There was no difference in the knowledge of case definitions across the whole spectrum of the studied population.

A significant finding in this study was that of a better surveillance practice and IDSR implementation in facilities where focal surveillance persons existed compared with those having none. Even though the knowledge of disease surveillance did not differ between the facilities with focal persons and those without, this findings may mean that these focal persons did not necessarily posses superior knowledge of disease surveillance but were more committed to its

practice and implementation by reason of their designations. This is perhaps a justification for the requirement of a focal person at every facilities by the national guidelines.

In this study, only 19.7% of the facilities claimed to be reporting diseases. This low level of reporting is consistent with reports from other parts of the world. Tan et al, 2009 had reported a low level of reporting among private doctors in Taiwan suggesting that this pattern might be a global trend and not necessarily peculiar to our studied population. While reasons for not reporting among these private doctors in Taiwan were unwillingness to disclose patient's private information and the cumbersomeness of reporting process, a major reason for this abysmal trend in IDSR implementation in our own population could be the deficiencies in the knowledge of health workers about IDSR and lack of relevant trainings. Worthy of note is the fact that the public health facilities only fared better than the private in this respect, their performance was still notably low. Boehiner et al, 2011 had suggested the use of hospital discharge summaries while Gilberg et al advocated widespread multimedia campaign to establish partnership and improve communication lines as possible measures to address these poor reporting rates. These measures have only produced limited applicability and unsustained effects.

Chan EH, et al 2010 in an analysis of the entire WHO disease outbreak data between 1996 and 2009 demonstrated improvements in both outbreak detection and public communication in the Western Pacific and Eastern Mediterranean regions without such being reciprocated in the African region. The current findings of just 1.5% of the facilities studied making both appropriate and timely reporting calls for serious concerns. Although 26 facilities indicated that they report priority diseases, only 2 were found to be doing it appropriately

Timeliness of reporting is essential for prompt response by health authorities. Unfortunately, there remains a lot of challenge in most parts of the world about timeliness of reporting. Reijn, et al 2011 analysed a Netherland's disease outbreak data demonstrating delays beyond two to three incubation periods of diseases before reporting. Similarly, Yoo et al, 2009 in a cross sectional analysis of Korean national disease outbreak data also found delays in reporting which were mostly attributed to the delays between disease onsets and laboratory confirmations. These groups of workers had suggested a direct reporting of laboratory diagnoses to health authorities as having the potential of improving timeliness. While this might also be appropriate for our setting in Nigeria and the African sub-region generally, the starting point will however be addressing the non availability of functional laboratories among other knowledge gaps to be filled by trainings and re- trainings.

This study revealed that there was no evidence of disease outbreak preparedness in practically all the facilities studied. This was similar to the finding of Abubakar et al, 2010 in a Northern Nigerian local government area where there was no demonstrable emergency preparedness and capacity to detect disease outbreaks. These alarming discoveries should be given the utmost attention by every stake holder with the view of ensuring better indices of IDSR implementation.

Conclusions

Knowledge and practice of disease surveillance as well as implementation of Integrated Disease Surveillance and Response strategy were generally below average in all the health facilities irrespective of status and location with poorer implementation in the private facilities.There is great need to ensure adequate participation of the private health facilities in surveillance activities. The existence of a surveillance focal person improved surveillance practice.Training

of health personnel combined with other important components of IDSR strategy like regular and adequate supply of necessary reporting tools , sustainable supervision and feedback by LG are very crucial to the successful implementation of IDSR . There is a need to institute measures to improve awareness and participation of health facilities in disease surveillance to achieve set goals.

Recommendations

Based on the findings of this study, the following recommendations are made.

I. Due to the poor knowledge of disease surveillance among all health workers interviewed, disease surveillance should be included in the curriculum of all health institutions.

II. All health facilities should be mandated to have a surveillance focus person who will be responsible for timely and complete surveillance activity in their respective facilities.

III. Integrated training of health personnel on IDSR by LGA to be complemented by training and re-training by health facilities.

IV. Regular and adequate supply of surveillance tools to health facilities by appropriate authorities

V. The LG surveillance units should be empowered in terms of personnel, training and materials to coordinate the surveillance activities of the health facilities.

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APPENDIX 1

IMPLEMENTATION OF INTEGRATED DISEASE SURVEILANCE AND RESPONSE BY PUBLIC AND PRIVATE HEALTH FACILITIES IN TWO LOCAL GOVERNMENT AREAS OF OYO STATE

Introduction

Dear Sir/Madam,

This study is being carried out in some health facilities in Oyo State to evaluate the implementation of the Integrated Disease Surveillance and Response System. This questionnaire is not an examination neither is it intended to indict any person or facility. Your honest responses will be highly appreciated as this will give us a true reflection of the current situations and help in formulating interventional measures where and if necessary. You can respond on the basis of anonymity. Thank you for your cooperation.

QUESTIONNAIRE

SECTION A (Identification and Demographic data)

1. Serial number: ----------
2. Name of local government ----------
3. Name of Health Facility----------
4. Type of facility ☐

1 = Public facility,

2 = Private facility

5. Class of facility

1= Tertiary,

2 = Hospital,

3 = Health Center,

4 = Health Post.

6. Category of respondent

1 = Doctor,

2 = Nursing Officer,

3 = Medical Records Officer,

4 = Community Health Officer,

5 = Others (pls specify)

7. Designation of respondent

1 = Head of facility,

2 = Surveillance focal person,

3 = Records Officer,

4 = Others (specify) ----------

8. Sex of respondent

1 = Male, 2 = Female

9. Age at last birthday of respondent----------

10. Marital Status of respondent

1 = Single (never married)

2 = Married

3 = Single (other)

11. For how long (in years) have you been working in this health facility? ----------

SECTION B (Knowledge about disease surveillance and IDSR)

12. .The report of priority diseases from Health Facilities when made, should be to

Which of the following agents of government?

1 = Federal Ministry of Health

2 = National Primary Health Care Development Agency

3 = Hospital Management Board

4 = Statistic Office

5 = LGA PHC Department

6 = Others (specify) ----------

The following are epidemic prone diseases?

1 = Yes, 2 = No, 3 = Don't Know

13. Cholera ☐
14. Measles ☐
15. Poliomyelitis ☐
16. Malaria ☐
17 HPAI-Human ☐

The following diseases are targeted for eradication and elimination

Yes = 1, No = 2, Don't Know = 3

18. Neonatal Tetanus ☐
19. Leprosy ☐
20. Malaria ☐
21. Poliomyelitis ☐
22. HIV/AIDS ☐

The following diseases are categorized as Diseases of Public Health Importance

1 = Yes, 2 = No, 3 = Don't Know ☐

23. Scistosomiasis ☐

24. Tuberculosis ☐

25. Diarrhoea diseases ☐

26. Dysentary diseases ☐

27. Cerebrospinal meningitis ☐

The following diseases are to be reported immediately

28. Outbreak of any disease ☐

29. Cholera ☐

30. Yellow fever ☐

31. A case of measles ☐

Which of the following categories of diseases are to be reported weekly?.

32. CSM ☐

33. Cholera ☐

34. Lassa fever ☐

35. Yellow fever ☐

Which of the following categories of Diseases are to be reported monthly?

36. Hepatitis B ☐

37. Pertusis ☐

38. Tuberculosis ☐

39. Plague ☐

40. Neonatal Tetanus ☐

41. Do you know about Integrated Disease Surveillance and

Response? 1 = Yes ☐

2 = No.

. If yes to 41 above, what is your source of information?

1 = Media, ☐

2 = FMOH bulletin, ☐

3 = Internet, ☐

4 = LGA Surveillance unit ☐

5 = Others (pls specify) ----------. ☐

If response to 41 is No, please go to section D

43. How many diseases are reportable under the IDSR in Nigeria? ----------

The following are reporting data forms/tools used in IDSR

1=Yes, 2 =No, 3= Don't Know

44. DSN 001 ☐
45. DSN 002 ☐
46. IDSR 001a ☐
47. IDSR 001b ☐
48. IDSR 001c ☐
49. IDSR 002 ☐
50. IDSR 003 ☐
51. Line List ☐

52. The recommended case definition for a suspected case of Cholera is

1= A patient aged 2years or less with severe dehydration or death from acute watery diarrhea ☐

2 = Passage of 2 loose or watery stool in the last 24hours in children less than 5years with or without dehydration

3= A patient age 5 years or more, with severe dehydration or death from acute

watery diarrhea

4 = Others specify

5= Don't know.

53. In the recommended case definition for a suspected case of poliomyelitis, acute flaccid paralysis should be reported in which of these age groups? ☐

0 – 5 = 1, 0 – 10 = 2, 0 – 15 = 3, 1 – 5 = 4.

SECTION C (Attitude to IDSR)

54. What is your opinion of the IDSR System

1 = Very important ☐

2 = Unnecessary

3 = Indifferent

55. What is your view of the process?

1 = Cumbersome (too many forms), ☐

2 = Easy,

3 = Enjoyable.

56. Do you think the IDSR programme has helped in reducing morbidity, mortality and disability caused by the priority diseases?

1=Yes 2 = N ☐

57. Do you think you need more information about IDSR?

1=Yes ☐

2= No

SECTION D (Implementations of IDRS at the facility)

58. Do you report cases of priority diseases?

1=Yes, 2 = No ☐

59. Who do you report to? ----------

60. What types of forms do you use for reporting? Pls specify ----------

---

---

61. List of 5 commonest priority diseases reported

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------

62. Date when 3 previous reports were sent

Report 1----------

Report 2 ----------

Report 3----------

Do you have any of the following communication apparatus?

63. Land telephone

64. Facsmile

65. High frequency radio.

66. E-mail

67. Do you have a Clinical register for keeping records of diseases in your facility?

(Confirm this) ☐

1 = Yes, 2 = No

68. Do you record information about immediately notifiable diseases on a case form or a

line list (confirm this) 1=Yes, 2 = No ☐

69. Do you analyse your record on priority diseases? (Ask to see the health facility

analysis book) ☐

1=Yes, 2 = No

If IDSR is not practiced, please go to Section E

70. Do you have a focal person in charge of IDSR in this facility? ☐

Yes = 1, No =

71. Has any staff of the facility attended training on IDSR in the last one year?

1=Yes, 2 = No ☐

72. If yes to 71, who organized the training

1=LGA

2=SMOH ☐

3 = NPHCDA

4= FMOH

5 =Others specify…….

73. If yes to above, when was your last participation?----------

74. Do you have a copy of the national technical guidelines for IDRS in Nigeria?

1 = Yes, 2 = No (confirm this) ☐

75. Are diagnoses of cases of priority diseases recorded in the register according to the

standard case definition (confirm this) ☐

1=Yes, 2 = No ☐

76. Do you have regular supply of IDSR reporting forms for priority diseases?

1 = Yes, 2 = No (confirm this)

77. If yes to 76 above, how do you get your supply of reporting forms? ----------

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78. Does the facility have an outbreak coordinator? (Confirm this) ☐

1=Yes, 2 = No

79. Do you render immunization services in you facility?

1=Yes, 2 = No ☐

80. If yes to question 79 above, how often do you carry out the services? (pls specify)

---

81. If no, why (pls specify)----------

---

82. Do you have access to a functioning laboratory that can reliably process specimens?

(e.g sputum ,stool , blood ,serum.)

1=Yes, 2 = No ☐

83. How far is the laboratory to your health facility? ----------

84.. Have you received a report or a bulletin from your LGA, State or National level about

data reported in the last one year? (Confirm this)

1=Yes, 2 = No ☐

85. Have you met with your community members to discuss investigation results in the last 6 months and other feed backs? ☐

1=Yes, 2 = No

86. If yes, specify what was discussed ----------

---

87. Have you had a supervisory visit from the LGA surveillance unit within the last 6 months? 1=Yes, 2 = No ☐

88. Are there display of line trends of priority diseases? (Confirm this)

1 = Yes, 2 = No ☐

89. Does the facility keep duplicate copies of reporting forms

1 = Yes, 2 = No ☐

SECTION E (Occurrence of Epidemics and Response)

90. Did you record any incidence of epidemic in the last one year? ☐

1 = Yes, 2 = No, 3 = Don't Know

91. If yes to 90 above, please specify the type of the epidemics ----------

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92. What steps were taken during the epidemics?----------

---

93. What difficulties were encountered during the epidemics?----------

---

---

94. Are supplies available or set aside for collecting specimen ☐

during emergency? 1 = Yes, 2 = No (confirm this)

.Are the following supplies available for responding to confirmed cases or outbreaks

		Yes	No
95.	Vaccines	☐	☐
96.	Immunization supplies	☐	☐
97.	ORS	☐	☐

98. Antibiotics □ □

99. Others (pls specify) ----------

-

Thank you for your attention.

APPENDIX 2 (ETHICAL APPROVAL)

TELEGRAMS..... TELEPHONE.....

MINISTRY OF HEALTH

DEPARTMENT OF PLANNING, RESEARCH & STATISTICS DIVISION

PRIVATE MAIL BAG NO. 5027, OYO STATE OF NIGERIA

Your Ref. No. .....

All communications should be addressed to the Honorable Commissioner quoting

Our Ref. No. AD 13/ 479/____ 28th September, 2007

The Principal Investigator,
Department of Epidemiology & Medical Statistics,
Faculty of Public Health
College of Medicine,
University of Ibadan,
Ibadan.

Attention: Yinka-Ogunleye A. F.

Ethical Approval for the Implementation of your Research Proposal in Oyo State

This acknowledges the receipt of the corrected version of your Research Proposal titled: "*Implementation of Integrated Disease Surveillance and Response by Public and Private Health Facilities in Two Local Government Area of Oyo State*".

2. The committee has noted your compliance with all the ethical concerns raised in the initial review of the proposal. In the light of this, I am pleased to convey, to you, the approval of committee for the implementation of the Research Proposal in Oyo State, Nigeria.

3. Please note that the committee will monitor, closely, and follow up the implementation of the research study. However, the Ministry of Health would like to have a copy of the results and conclusions of the findings as this will help in policy making in the health sector.

4. Wishing you all the best,

OYO STATE RESEARCH ETHICAL REVIEW COMMITTEE
Signature & Date
MINISTRY OF HEALTH IBADAN

Mrs. V. A. Adepoju
Director, Planning, Research & Statistics
Secretary, Oyo State, Research Ethical Review Committee

APPENDIX 3 (IDSR FORM OO1A)

Immediate case based reporting form

IDSR 001A

REPORTING HEALTH FACILITY	REPORTING LGA
IDENTIFICATION NUMBER: ___ ___ ___ - ___ ___ - ___ ___ ___ ___ ___ ___	

Immediate/ Case-based Reporting Form
From Health Facility/Health Worker to LGA health team

Cholera	Dracunculiasis	Neonatal Tetanus	Measles	Meningitis	HPAI	Viral Hemorrhagic Fever e.g. Lassa fever	Yellow Fever	Others/specify

Date form received at SMOH or the national level: / / (Date/Month/Year)				
Name of Patient:				
Date of Birth (DOB): / / (Day/Month/Year)	**Age (If DOB unknown):**	Year	Month (if <12)	Day (NNT only)
Sex:	M=Male F=Female			
Patients Address:	**Urban**	**Rural**		
Settlement/Village				
Ward	**LGA**	**State:**		
Exact residential address:				
	If applicable or If the patient is neonate or child, please write full name of mother and father of the patient			
Date Seen at Health Facility: / /	**Date Health Facility notified LGA/:** / /	**Date of Onset:** / /		
Number of vaccine doses received:	9=unknown For cases of Measles, NT (TT in mother), Yellow Fever, and Meningitis (For Measles, TT, YF- by card & for Meningitis, by history)			
Date of last vaccination:	/ /			
	(Measles, Neonatal Tetanus (TT in mother), Yellow Fever, and Meningitis only)			
Close contact with infected poultry	1=Yes 2=No			
Close contact with suspected or confirmed case of Avian influenza	1= Yes 2 =No			
Associated with an outbreak?	1=Yes 2=No			
In/Out Patient	1=Inpatient	2=Outpatient		
Outcome	1=Alive	2=Dead	9=Unknown	

Final Classification of case	1=Confirmed	2=Probable	3=Discarded	4=Suspect	
Final Classification for Measles	1= Laboratory Confirmed	2= Confirmed by Epidemiological linkage	3=Clinical Compatible	4=Discard	5=Suspect with lab pending

Person completing form **Name:**	**Signature:**
Title: **Address:**	
Date form sent to LGA/: / / (Date/Month/Year)	

APPENDIX 4 (IDSR FORM 001B)

Lab form IDSR 001B

For Health Facility: If lab specimen is collected, complete the following information and send a copy of this form to the lab with the specimen.

Date of specimen collection: ____/____/____

Type of specimen: | Stool | Blood | CSF | Other/specify

Date specimen sent to lab: ____/____/____

ID Number:

For the Lab: Complete this section and return the form to LGA/ health facility or clinician

Date lab received specimen: ____/____/____

Specimen Condition: | Adequate | Not adequate

Disease/Condition:

Type of Test:

Result:		+ = Positive	- = Negative	P = pending
Malaria	P. Faliciparum			
	P. Vivax			
Cholera (culture)				
Cholera direct exam; specify the method used:				
Meningitis: N meningitides	Culture			
	Latex			
	Gram stain			
Meningitis: S. pneumoniae	Culture			
	Latex			
	Gram stain			
Meningitis: H. influenzae	Culture			
	Latex			
	Gram stain			
Shigella Dysenteriae	Culture			
	Type	SD Type 1	Other Shigella types	No Shigella

Result:		+ = Positive	- = Negative	I= Indeter	P=Pending
Viral Detection	Yellow fever (IgM)				
	Measles (IgM)				
	Rubella (IgM)				
	RVF (IgM)				
	Ebola (IgM)				
	Lassa (Ig M)				
	Marburg (IgM)				
	HPAI (IgM)				

Other lab test (specify) | Results:

Date lab sent results to LGA//health facility: ____/____/____

Name of lab sending results:

Other pending results:

Name of lab technician sending the results: | Signature:

Date LGA/ receive lab results: ____/____/____ | LGA/:

Date lab results sent to health facility by LGA/: ____/____/____

Date lab results received at the health facility: ____/____/____

APPENDIX 5 (IDSR FORM 001C)

Line List for Reporting from Health Facility to LGA and for Use During Outbreaks

IDSR 001C

Health Facility: _____ Date ent to LGA _____

LGA: _____ State _____ Disease/Condition: _____

	ID Number (Assigned at the LGA level only) 001,002, etc.	(O)ut / (I)n Patient	Name	Village, ward or Town and Neighbourhood	Sex	Age **	Date of onset of disease	Date seen at Health facility	Number of doses of vaccine (Exclude doses given within 14 day of onset	Close contact with infected poultry	Close contact with suspect/ confirmed case of HPAI	Lab test		Outcome (A)live (D)ead	Comment
												Specimen taken (Yes/No) if yes. date collected	Lab results		
1															
2															
3															
4															
5															
6															
7															

- If LGA sends specimen to the lab. use ID number as well (PPRDDD-YY-xxx format) to identify lab specimen
- If health facility sends lab specimen to lab without passing through the LGA. then the name (only) will be the lab specimen identifier

NOTE:-If more than 100 cases occur in a week (e.g. for measles. cholera. etc.) at a health facility. line listing of cases is not required: record just the total number of cases

- If previously reported cases die. update the status by completing a new row with died in the status column and update record in the Comments column.

**Age in years if more than 12 months otherwise write age in months (e.g. 9m)

Date received at LGA ----------

Name & signature of Officer ----------

APPENDIX 6 (IDSR FORM 002)

WEEKLY REPORTING OF NEW CASES OF EPIDEMIC PRONE DISEASES AND OTHER PUBLIC HEALTH PHENOMENA UNDER SURVEILLAN CE

IDSR 002

☐ Month

☐ Year

Year: _____

Week number: ___ From: ___/___/____/ To: ___/___/_____/

Health facility: LGA State (specify)

HFs/LGAs/ States (with cases)	Cerebro-spinal Meningitis			Cholera			Viral hemorrhagic fever (e.g.Lassa fever)			Measles			Yellow fever			Other acute communicable disease outbreak (specify) * (SARD)		
	Cases	Lab Confirmed	Deaths	Cases	Lab Confirmed	Deaths	Cases	Lab Confirmed	Deaths	Cases	Lab Confirmed	Deaths	Cases	Lab Confirmed	Deaths	Cases	Lab Confirmed	Deaths
Total																		
Case fatality rate																		

Date of submission of this report: ___/___/_____/

Officer in charge: _____ Signature _____

APPENDIX 7 (IDSR FORM 003)

ROUTINE MONTHLY NOTIFICATION FORM: IDSR 003

Health facility ____ LGA ____ State ____ ____ No. of HF/ LGAs Month ____

(tick as appropriate) ____ No. of HF/LGAs reporting. Year ____

Name of HF/LGA/State: _____

DISEASE	Cases out-patients			Cases in- patients				DEATHS			
	Less than 5yrs	5-14yrs	15yrs & above	Less than 5yrs	5-14yrs	15yrs & above	Total cases in & out patient	Less than 5yrs	5-14yrs	15yrs & above	Total
1. CSM											
2. Cholera											
3. Diarrhoea (Watery without blood)											
4. Diarrhoea (with blood)											
5. Dracunculiasis (Guinea Worm)											
6. Hepatitis B											
7. HIV/AIDS											
8. Viral hemorrhagic fever (e.g. Lassa Fever)											
9. Leprosy											
10. Lymphatic Filariasis											
11a) Malaria											
11b) Malaria (severe)											
11c) Malaria (Pregnant Women)											
12. Measles											
13. Pertussis											
14. Plague											
15. Pneumonia											
16. Poliomyelitis											
17. STIs: a). Vaginal discharge											
17b) Genital Ulcer											
17c) Urethral discharge											
17d) Others STIs											
18. Neonatal Tetanus											
19. Tuberculosis											
20. Onchocerciasis											
21. Yellow Fever											
22. SARD											

Name of Reporting Officer _____ Signature & date _____

APPENDIX 8 (RECOMMENDED CASE DEFINITIONS OF PRIORITY DISEASES)

ANNEX 2 FMOH/WHO recommended case definitions for reporting suspected priority diseases or conditions from the health facility to the LGA

FMOH/WHO recommends that health facilities use the following surveillance case definitions for reporting suspected cases of priority diseases and conditions to the LGA level. Please refer to the disease-specific guidelines in Section 8 for additional information about specific case definitions.

Epidemic-prone diseases	
Cholera	Any person 5 years of age or more who develops severe dehydration or dies from acute watery diarrhoea, Any patient above the age of 2 years with acute watery diarrhoea, in an area where there is an acute outbreak of cholera,
Measles	Any person with fever and maculopapular (non-vesicular) generalised rash and cough, coryza or conjunctivitis (red eyes) or any person in whom a clinician suspects measles. A measles death is a death occurring within 30 days of onset of the rash.
Cerebro-spinal Meningitis	Any person with sudden onset of fever (>38.5°C rectal or 38°C axillary) and one of the following signs: neck stiffness, altered consciousness or other meningeal signs.
Viral hemorrhagic fevers (Lassa fever)	Any person with severe illness, fever, with or without sore throat and at least one of the following signs: bloody stools, vomiting blood, or unexplained bleeding from gums, nose, vagina, skin or eyes.
Yellow fever	Any person with sudden onset of high fever (>39°C rectal or 38°C axillary), followed by jaundice within two weeks of onset of first symptoms.
Highly Pathogenic Avian Influenza : HPAI (human)	Any person with fever (>38oC) and one or more of the following: cough, sore throat, shortness of breath with history of contact with sick or dead birds or contact with suspected or confirmed case of Avian Influenza
Diseases targeted for eradication and elimination	
Poliomyelitis	Any child less than 15 years of age with a sudden onset of paralysis (AFP) or a person of any age in whom the clinician suspects polio.
Dracunculiasis	Any person with a history of skin lesion and emergence of Guinea worm within one year of the skin lesion.
Leprosy	Any person with hypopigmented patches and loss of sensation over the patches (excluding patients released from treatment).
Neonatal tetanus	Any newborn with a normal ability to suck or cry during the first two days of life, and who, between 3 and 28 days of age, cannot suck normally, becomes still or has convulsions or both.
Lymphatic filiariasis	Any person in an endemic area with lymphoedema, elephantasis or hydrocoele with or without microfilaria (W. bancrofti) in night blood sample

Other diseases of public health importance	
Diarrhoea in children less than 5 years of age	***Diarrhoea with some dehydration:*** Any child less than 5 years of age with diarrhoea and two or more of the following: restless or irritable sunken eyes drinks eagerly, thirsty skin pinch goes back slowly ***Diarrhoea with severe dehydration*** Any child less than 5 years of age with diarrhoea and two or more of the following: lethargic or unconscious sunken eyes not able to drink or drinking poorly skin pinch goes back very slowly
Diarrhoea with blood ***(Shigella: dysentry)***	Any person with diarrhoea and visible blood in the stool.
Pneumonia in children less than 5 years of age	***Pneumonia*** Any child aged 2 months up to 5 years of age with cough or difficult breathing and breathing 50 breaths per minute or more in an infant 2 months up to #1 year breathing 40 breaths or more per minute for a child aged 1 to 5 years ***Severe Pneumonia*** Any child age 2 months up to 5 years with cough or difficult breathing, and with any general danger sign, or chest indrawing, or stridor in a calm child. General danger signs are: unable to drink or breast-feed, vomits everything, convulsions, lethargy or unconsciousness. Infants less than 2 months with fast breathing 60 breaths per minute or more
AIDS	Any person with fever or diarrhoea of one-month duration or more, or loss of more than 10% body weight with positive HIV laboratory result.
Severe Acute Respiratory Disease (SARD)	Severe acute unexplained respiratory illness with fever e 38C plus cough or sore throat.

APPENDIX 9 (LIST OF LOCAL GOVERNMENT AREAS IN OYO STATE)

	LGAs	NUMBER OF WARDS
1	AFIJIO	10
2	AKINYELE	12
3	ATIBA	10
4	ATISBO	10
5	EGBEDA	11
6	IBADAN NORTH	12
7	IBADAN NORTH EAST	12
8	IBADAN NORTH WEST	11
9	IBADAN SOUTH EAST	12
10	IBADAN SOUTH WEST	12
11	IBARAPA CENTRAL	10
12	IBARAPA EAST	10
13	IBARAPA NORTH	10
14	IDO	10
15	IREPO	10
16	ISEYIN	11
17	ITESIWAJU	10
18	IWAJOWA	10
19	KAJOLA	11
20	LAGELU	14
21	OGBOMOSO NORTH	10
22	OGBOMOSO SOUTH	10
23	OGO-OLUWA	10
24	OLORUNSOGO	10
25	OLUYOLE	10
26	ONA ARA	11
27	OORELOPE	10
28	ORIIRE	10
29	OYO EAST	10
30	OYO WEST	10
31	SAKI EAST	11
32	SAKI WEST	11
33	SURULERE	10