**AFRICAN INSTITUTE FOR PROJECT MANAGEMENT STUDIES**

**(AIPMS)**

**COURSE NAME: DIPLOMA IN PUBLIC HEALTH (2019/2020)**

**STUDENT NAME: FRANCIS MORI MOGA.**

**CONTINUOUS ASSESSMENT TEST (CAT-4)**

**MODULE 4 : PUBLIC HEALTH DATA AND SURVEILANCE**

**Question 1:**

**Define Data. Why is it paramount to for Public health professional to take**

**comprehensive individual data?**

The term data is derived from Latin term ‘datum’ which refers to ‘something given’. The concept of data is connected with scientific research, which is collected by various organisations, government departments, institutions and non-government agencies for a variety of reasons.

Data is defined as the collection of facts and details like text, figures, observations, symbols or simply description of things, event or entity gathered with a view to be stored, processed, and transmitted for use into sensible conclusions. It acts as informational building blocks when collected in the raw fact, which should be processed to gain meaningful information in a broader sense. It is the unprocessed data, that contains numbers, statements and characters before it is refined by the researcher or individual collecting the data to gain such meaningful information.

Data collection is the ongoing systematic process of gathering, analyzing and interpreting various types of information from various sources. In general, data collection is done for research purposes in order to understand the full picture of an area of interest and to build a foundation for decision-making. Data collection in healthcare allows health systems to create holistic views of patients, personalize treatments, advance treatment methods, improve communication between doctors and patients, and enhance health outcomes. Collecting this information is part of the process by which the public health staff can identify and address unique patient needs. Patients are more likely to share personal information when asked by respectful, knowledgeable staff, and the health personnel is able to serve its patients when this information is collected for everyone in a consistent manner. This information includes and not limited to patient’s:

Age, sex, gender, race, culture, ethnicity, medical history, patient’s health condition, reproductive outcome, behavioural, socio-economic status, quality of life etc.

By knowing more about the patient’s information in details, the public health staff will be able to send notifications to patients about the need to undergo a new test or to ensure compliance with drug prescriptions. By using a scope of data from digital medical records, doctors can establish a link between fundamentally different symptoms, give an accurate diagnosis and provide adequate treatment for patients and the vulnerable, as a results the public health department and the medical health service providers collectively will be able to:

* Understands more about various disease risks and causes
* Improve on patient diagnose and management
* Develop new treatment protocols and prevention of a disease
* Improvement of patient safety
* Proper planning of national health services & policy
* Evaluate government national health policy.

**Question 2:**

**Identify six institutions or organizations that provide health services in a country or**

**state and briefly discuss the roles played by each of them:**

1. **National Tuberculosis control program (NTBCP).**

The national TB control in South Sudan is organized in the framework of a national health programme which includes not only the control of TB but also that of leprosy and Buruli Ulcer. This programme was established in 2006 and is under the responsibility of the Directorate of Preventive Health Services within the Ministry of Health. The NTP has a managerial structure that covers all the three key health levels. This structure ensures the organization, coordination, implementation and delivery of TB prevention, care and control services.

**The main Goal of the NTP** is to contribute towards reduction of TB prevalence from 257/100,000 (WHO estimate, 2012) to 180/100,000 (30%) by the year 2030 To this end, mid-term objectives have been defined and specified in the 2015-2019 National Strategic Plan (NSP). These objectives are:

**1:** To increase the number of notified TB cases to at least 24,000 in 2019.

**2:** To increase treatment success rate of bacteriologically confirmed TB cases from 72% in 2012 to at least 85% by 2019.

**3:** To achieve a treatment success rate of at least 75% among enrolled MDR-TB patients by 2019.

**4:** To reduce death rate during TB treatment in TB/HIV co-infected patients from 11% to less than 5% by 2019.

**5:** To strengthen the overall capacity of NTP management

1. **National HIV/AIDS control Program (HIV/AIDS CP)**

South Sudan adopted a clear strategy to fight against HIV in the framework of National Strategic Plan (NSP) for HIV/AIDS (from 2018 to 2022) which rests on three pillars namely: prevention of new infections, care, treatment and support, and creating a sustainable enabling environment for intensified HIV prevention, treatment, care, and management interventions. The NSP prioritised to intensify HIV prevention efforts across key populations, vulnerable populations, and populations of humanitarian concern. In addition, improving and increasing access to quality HIV care, treatment, treatment as prevention and TB/HIV collaboration across key, general and humanitarian populations.

The mission of the *HIV/AIDS Policy and Control Strategies for the South Sudan,* which came into force on 1 September 2001, was to:

* Prevent the spread of HIV to those that are not infected,
* Reduce HIV/AIDS-related morbidity and mortality, and
* Protect the rights of those who are infected with and affected by HIV/AIDS.”31
* “Provide national leadership in national planning, supervision and support of HIV/AIDS programs.
* Initiate and recommend policies, regulations and strategies for curbing and combating the spread of HIV/AIDS and to expand and coordinate the national response to HIV/AIDS.
* Foster national and international linkages among all stakeholders through proper coordination of all HIV/AIDS prevention and control programs and activities within the overall national multi sectoral strategy.
* Reduce the vulnerability of individuals and communities to HIV/AIDS and to contribute in alleviating the socio-economic and human impact.
* Promote and protect the rights of both infected and affected persons.

1. **National malaria control program (NMCP)**

The Government of South Sudan expends significant resources in the fight against malaria. With support from development partners, it has invested in personnel, infrastructure, and the procurement and distribution of malaria commodities in the country. As one of the key partners supporting government efforts to control malaria, SIAPS has been working to build the capacity of the National Malaria Control Program (NMCP), a government organization responsible for the planning, coordination, and general oversight of all malaria prevention and control activities, including fulfilling Roll Back Malaria and MIS requirements.

The National Malaria Control Programme is under the directorate general of

Primary Health Care in the organogram of the NMOH and it consists of five main

departments headed by the National malaria control programme coordinator. The

NMCP has developed state malaria control programme (SMCP) in each of the 10

states and each SMCP consists of three departments with the following objectives:

* To provide a prompt and reliable diagnosis and effective malaria treatment and management.
* Provide effective preventive measures
* Detection and control of Malaria epidemics
* Provide malaria surveillance, M&E and operational research.
* Partner with the private sector in the control of Malaria.

The NMCP is able to achieve these objectives by implementing the following policies:

* Setting national policies, strategies, and plans for malaria control
* Setting standards, establishing technical guidelines, and quality assurance

protocols and systems

* Establishing states’ malaria control units
* Conduct human resource needs assessment and develop capacity building plans

for all levels

* Overall supervision & monitoring and evaluating malaria control activities
* Resource mobilization, building partnership and intersectoral and intra-sectoral

collaboration

* Support control of epidemics of national threats
* Develop, implement and guide applied research activities
* Advocate for malaria control strategies and activities at different levels.

1. **Expanded program on immunization (EPI)**

The EPI program is located in Directorate of Community and Public Health services. The

**vision** of program is to ensure that the population of South Sudan is free of vaccine preventable diseases and its **mission** is to contribute to the overall objective of the HSDP in

reducing morbidity, mortality and disability due to childhood vaccine preventable diseases.

The programme aims at ensuring that every child is fully immunized by the first birthday

against targeted diseases, and every new born is protected from neonatal tetanus. The targeted

diseases are tuberculosis, poliomyelitis, diphtheria, pertussis, tetanus and measles.

The programme has 3 focus areas namely:

1) Strengthening routine immunisation;

2) Supplemental immunisation activities to achieve globally set targets of polio eradication,

elimination of maternal and neonatal tetanus, and accelerated measles control;

3) Establishing a sensitive disease surveillance system.

The immunization program in South Sudan is countrywide covering all Counties. And in line

with the mandates of the Ministry of Health, the EPI program is responsible for policy,

standards and priority setting, capacity building, coordinating with other stakeholders and

partners, resource mobilisation, procurement of inputs such as vaccines and injection safety

materials, monitoring and technical support supervision to states and lower levels. The states

and counties are responsible for planning, management and delivery of EPI services. The

community is involved in mobilization and bringing the children for immunization.

Immunization is part of the Primary Health Care Approach used in the country and is integrated into the child survival at all levels.

1. **Guinea worm eradication program (GWEP)**

Dracunculiasis is infection with Dracunculus medinensis, a nematode worm, also known as Guinea worm. It is caused by drinking water containing water fleas (Cyclops species) that have ingested Dracunculus larvae.

Since 2006, the guinea worm eradication programme have been established in South Sudan with the purpose of wiping out this ancient disease mainly through community-based interventions to educate and change behavior, such as teaching people to filter all drinking water and preventing transmission by keeping anyone with an emerging worm from entering water sources and employing community-based surveillance system capable of detecting index Guinea worm cases in endemic and at-risk villages of South Sudan.

To achieve the goal of eradicating Guinea worm disease (GWD), the Ministry of Health established a taskforce called the South Sudan Guinea Worm Eradication Taskforce (SSGWETF)**.** The purpose of the SSGWETF was to help the SSGWEP through high-level technical assistance, advocacy, resource mobilization, and coordination across critical eradication strategies that are all oriented towards empowering communities, to prevent GWD transmission by:

1. Provision of safe water to endemic communities, including both “software” (health and hygiene promotion as well as Operations and Maintenance support) and “hardware” – e.g. new facilities such as boreholes, spring-fed schemes, protected wells, dam infiltration, etc.

* Mobilize resources from bilateral and multi-lateral donors for sustainable water development and mass health/hygiene promotion activities, targeting the most endemic villages.
* Identify appropriate roles for communities and partners working in the water and health sectors for implementation of safe water delivery, including both hardware and software components, in targeted endemic communities of South Sudan.
* Establish technical oversight mechanism for monitoring status of safe water delivery and sustainability in Guinea worm endemic villages.
* Review and recommend coordination mechanisms with partners at county-, state- and national- levels for safe water development and health/hygiene promotion for both Guinea worm eradication and control of other water-borne/-related diseases.
* Establish an awareness campaign with traditional, political, and civil society leadership to sensitize them to Guinea worm eradication and the role they can play in its success

1. Effective community-based surveillance that is the driving force for complete interruption of Guinea worm transmission by:

* Roll-out plans for the wider implementation of SSGWEP community-based surveillance activities in South Sudan, including the incorporation of other surveillance structures to detect outbreaks in areas known to be free of GWD transmission.
* Recommend a monitoring and evaluation plan for the SSGWEP and mechanisms for its implementation

1. **World health Organization (WHO).**

The WHO Representative’s Office in South Sudan supports the Government and health authorities at central and local level in strengthening health services, addressing public health issues and supporting and promoting research for health. South Sudan became WHO’s newest and youngest member state after its independence on 9 July 2011. At the national level, WHO provides technical assistance to the Ministry of Health in all issues related to health and development, with the main goal of improving the health status of the people of South Sudan.

The South Sudan country office’s objectives are to:

strengthen the stewardship function of the Ministry of Health, focusing on their capacity to regulate and monitor the health sector, and define the working framework for nongovernmental organizations and the private sector

support the completion, dissemination and implementation of national health policies, strategies, guidelines and legislation at the national, state and county level

provide technical support for pharmaceutical supply and drug quality control, including building capacity for the implementation of good manufacturing practice

enhance evidence-based decision-making processes through emphasis on health system research and the building of a robust national health management information system.

WHO takes lead of the health sector through coordination, identification of gaps, planning, monitoring and evaluation and reporting on behalf of the health cluster as mandated at global level.

WHO’s main priorities in South Sudan are to:

* ensure adequate and timely response to health hazards through coordination with all partners
* address inequality in the delivery of priority health services across the country by targeting the most underserved areas and filling service gaps
* support the recovery of the health sector by strengthening health services, while sustaining the institutional capacity of the Ministry of Health and increasing financial resources.

**Question 3:**

**Discuss the principles of Public health in the concept of health systems management:**

Health systems are a means to achieve the goal of improving health through organizing, financing, and ensuring the quality of health services. Alternatively, health care system is the organization by which health care is provided. The exact configuration of health system varies from country to country. But in all cases, in order to function, a system requires institutions and facilities, health care practitioners and professionals and financial mechanism. The system may be managed and /or funded by government or operated completely or partially by private market base institutions. The mechanisms governing health care in a given jurisdiction depend on the nature of the health policies in place.

The goals and the objectives of health care system in any country is improving the health of the population they serve, responding to people’s expectations, and providing financial protection against costs of ill health. Progress and success of these goals and objectives will be achieved depending on how systems carry out the four-core functions i.e. provision of health care services, resources generation / mobilization, acceptability, equity and the guarantee of the continues provision of such services (sustainability).

It has been noted that to address and ensure an effective health system in a country, the system should be made affordable, accessible, acceptable and equitable in order to save more lives. This is through a well-coordinated system between the government who is the lead institution with the collaboration with other non- governmental institutions that provide health to advocate for better health policies that should be incorporated into the national health policies to guide, manage, monitor and evaluate the provision and management of health system and services in the country, and any health institution or organization must comply with these national policies, rules and regulations to ensure that the national government policies oh health is adhered to . Such government policies may include and not limited to:

* The public health policies, programs and priorities should be developed and evaluated through process that ensure an opportunity for input from the community.
* The health care system should address principally the fundamental causes and requirements for health aiming to prevent adverse health outcomes.
* The public health should achieve community health in a way that respects the rights of individual in the community.
* The public health should advocate and work for the empowerment of disenfranchised community members aiming to ensure that the resources and conditions necessary for health are accessible to all.
* Public health programs and policies should incorporate a variety of approaches that anticipate and respect diverse values, beliefs, traditions and cultures in the community.
* Public health programs and policies should be implemented in a manner that most enhances the physical and social environment.
* Professionalism and competence of the health personal must be guaranteed.
* Public health institutions should protect the confidentiality that can bring harm to an individual or community if made public.
* The public health institutions should provide communities with the information they have that is needed for decision on policies or programs and should obtain the community consent for their implementation.
* The public health system should ensure full participation of the community in any aspect of the policy implementation to ensure accountability and sustainability.

Q. 4

**Give merits and demerits of Public Health Surveillance.**

Public health surveillance starts with defining the type of data to collect (systematic data framework development) and then the public health surveillance process cycles through three stages: data collection, analysis and interpretation, and the timely dissemination of findings. In addition, the surveillance system should be able to evaluate public health actions (including the surveillance system itself which is a public health action). The Public health surveillance is defined as the ongoing systematic collection, analysis, interpretation and dissemination of health data for the planning, implementation and evaluation of public health action.

Surveillance information collected is used to plan and implement public health policies and programs and to evaluate the success of the public health practice. The objective of program evaluation is to determine as systematically and objectively as possible the relevance, effectiveness, and impact of programs with respect to their objectives. However, the success of a program implementation depends on the effective public health surveillance conducted that is able to achieve or provide the program with information as:

**Merits:**

1. Detects epidemics and define a problem.
2. Determine geographic distribution of illness
3. Able to portray the natural history of the disease
4. Recognize cases or clusters of cases to trigger interventions to prevent transmission or reduce morbidity and mortality
5. Develop public health impact of health events or determine and measure trends.
6. Demonstrate the need for public health intervention programs and resources and allocate resources during public health planning.
7. Monitor effectiveness of prevention and control measures and intervention strategies.
8. Identify high-risk population groups or geographic areas to target interventions and guide analytic studies.
9. Develop hypotheses that lead to analytic studies about risk factors for disease causation, propagation, or progression.

A number of limitations have been identified for the current surveillance systems as:

**Demerits:**

1. The current surveillance practice is unable to address adequately either current or new potential challenges to public health
2. The current approach to public health surveillance is fragmented, as the various systems are not well coordinated on going public health information systems are not always integrated with public health surveillance and prevention activities. Instead, over time, a collection of independent and poorly coordinated surveillance systems has evolved in response to various needs.
3. It is difficult to address a new emerging health problem because surveillance for the specific problem usually does not exist. New health problems are not detected through the collection of routine surveillance data.
4. Existing surveillance systems may not provide timely data. Timeliness has two components: timeliness after the occurrence of the health event and timeliness of access to data.
5. Inadequate funding has been a problem with current systems of surveillance.

**Question 5:**

**As a newly employed health research manager, briefly explain what types of epidemiological studies you would think of in order to describe the association between the occurrence of disease and factors that influence the occurrence.**

A proper study design means that the approach and methods that will be used to carry out the study will yield results that are as valid and as precise as possible.  It also means that the study design is appropriate for the current scientific thinking on the topic. The study designs should provide useful information when applied in the appropriate situation and with the proper methods. The designs to be used are those in which the researcher controls the administration of the whole process. Therefore, it is usually critical that epidemiologists develop a keen ability to recognize the strengths and limitations of any study to yield a reputable survey result.

For Epidemiologist to study a disease and come up with factors associated with the occurrence and factors that influence their occurrence, epidemiologist employ the analytic epidemiologic studies to search for causes and effects, or the why and how. Epidemiologists use analytic epidemiology to quantify the association between exposures and outcomes and to test hypotheses about causal relationships.

Generally, the analytic epidemiologic studies fall in two studies i.e. experimental and observational studies.

**Observational Studies:**

In an observational cohort study, subjects are enrolled or grouped on the basis of their exposure, then are followed to document occurrence of disease, hence it is subdivided into:

* **Case-Control** **Study** - A study that identifies individuals who develop the disease (cases) and individuals without the disease (controls), and then determines the previous exposure for each case and control. The case group is composed only of individuals known to have the disease or outcome; the control group is drawn from a comparable population who do NOT have the disease or outcome. Then compare the odds of exposure between cases and controls.

*Case-control studies are inexpensive, efficient, and often less time consuming to conduct. This study design is described as the best, effective and always recommendable study design because it is especially suitable for rare diseases that have longer latency periods.*

* **Cohort** **Study** - A study that begins with persons who do not have the disease but with an known level of exposure to the putative risk factor, The known level is often no exposure. Thus, the study sample is drawn only from individuals at risk of developing the disease or outcome. Individuals are followed through time until some of them develop the disease. We then compare the rate of the outcome for the exposed group to the rate of the outcome for the non-exposed group. The measure of association is a relative risk, attributable risk or depicted with survival analysis. Incidence density rates can be calculated.

*A cohort study takes more time, money and subjects than does a case-control study but will also provide stronger evidence of individual-level causation because of the measuring incidence rates of the disease.*

* ***Cross-sectional study.*** In this third type of observational study, a sample of persons from a population is enrolled and their exposures and health outcomes are measured simultaneously. The cross-sectional study tends to assess the presence (prevalence) of the health outcome at that point of time without regard to duration.

**Experimental studies:**

In an experimental study, the investigator determines through a controlled process the exposure for each individual (clinical trial) or community (community trial), and then tracks the individuals or communities over time to detect the effects of the exposure.

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