STRATEGIC APPROACH FOR STRENGTHENING NATIONAL AND REGIONAL DISEASE SURVEILLANCE SYSTEMS: THE EAST AFRICAN EXAMPLE

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Abstract: Communicable diseases remain the most important health problems in Tanzania and the major causes of death and illness are malaria, acute respiratory tract infections, diarrhoeal diseases, tuberculosis and acquired immuno-deficiency syndrome. Epidemic-prone diseases such as cerebro-spinal meningitis, cholera, measles and bacillary dysentery are also prominent health problems in the country. The two major tools for collecting and analysing information regarding infectious diseases in the country are the Health Management Information System and the Infectious Disease Week Ending Report. The two systems have been validated and shown to be good for disease surveillance. However, as is of any other tool, highest level of effectiveness can only be achieved if they are implemented correctly and the results are used for the intended purposes. In addition, periodic evaluation of the tools may provide information to guide and strengthen their application in different environments. The major problem in surveillance has been delays in both the data collection and analysis, such that they render the final information useless for disease prevention and epidemic control. Due to lack of motivation to health workers involved in the exercise, validity of the collected data has also been in question. The recent introduction of the integrated disease surveillance approach by the Ministry of Health and the formation of the East African Integrated Disease Surveillance Network are means believed to enhance better collection of information, its validity and utilisation for disease control and prevention at national and regional level. This paper discusses best strategies for implementing the new approaches in order to reduce the current high burden of communicable diseases.

Introduction

Communicable diseases are the major public health problems in Tanzania. They consume the scarce national health resources and affect negatively economic productivity thus exacerbating poverty. They also have potential for spread and are therefore a threat to the region and international community. An analysis of the current disease surveillance systems has revealed that the major weakness is lack of committed actors with clear understanding of the reasons for data collection, usefulness of the data in relation to their work and the actual utilisation of such data (1).

Consequently, such workers feel overburdened to collect what they consider as useless data and the whole system has deteriorated in terms of sufficient data processing tools, long delays in reporting, poor communication system, lack of priority for confirmatory diagnostic facilities and weak epidemic preparedness. Frequent lack or delayed feedback to the districts and lower levels is one of the major demotivating factors to the performance of actors at lower levels.

The newly introduced integrated disease surveillance (IDS) approach aims to strengthen the disease

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monitoring systems at all levels so that collected data is correct and credible, analysed adequately and promptly, and passed on for timely action. However, motivating current actors at district and lower levels is key to the success of the new approach (1).

National Integrated Disease Surveillance and Response in Tanzania

The commonest causes of mortality, morbidity and disability in Tanzania include malaria, acute respiratory tract infections, diarrhoeal diseases, Human Immunodeficiency Virus/Acquired Immuno-deficiency syndrome (HIV/AIDS) and epidemic prone diseases (2,3,4). One of the main reasons why these diseases continue to cause high morbidity, mortality and disability is the weakness in our surveillance system. Surveillance activities in Tanzania have developed in an uneven way and are managed by different vertical disease control programmes. There are two major systems for collecting and analysing information regarding infectious diseases, the Health Management Information System (HMIS) also known by its Kiswahili acronym *MTUHA*, and the Infectious Disease Week Ending Report (IDWE). The Expanded Programme on Immunisation has also played a significant role in disease surveillance in the country.

The level of function of the most important disease surveillance systems in Tanzania is discussed elsewhere (1). In brief, since the introduction of the HMIS and IDWE reports there is no marked improvement in the level of morbidity and mortality due to communicable diseases (2,3). The major reason is the lack of appreciation of the importance of disease surveillance to the actors especially at district level and lack of motivation to give it the priority it deserves. The integrated disease surveillance strategy aims at integrating disease monitoring, control and good health care by strategic and operational research and capacity building. To achieve this, an assessment of the surveillance system in the country has already been done. The baseline status of the effectiveness and efficiency of the surveillance systems together with the level of performance indicators, strengths, weaknesses, threats and opportunities for integration has been established. Progress which has been achieved include the formation of a National Integrated Disease Surveillance Task Force, preparation of National Technical Guidelines on Integrated Disease Surveillance and Response, and the sensitisation of key people at regional and district levels in integrated disease surveillance strategy. The Ministry of Health has also identified 13 priority diseases (Table 1) to be included in the Integrated Disease Surveillance Strategy (5).

Disease surveillance requires impact indicators, based on standardised case definitions on morbidity and mortality (6,7,8). Definitions vary, depending on diagnostic capabilities at different levels of the health care system, and most importantly, whether the case is defined with the aid of laboratory diagnosis or not. Adequate case definition serves to provide indicators of disease epidemiology, which can be used for assessment, situation analysis and to evaluate the effectiveness of the disease control programmes.

The implementation of health sector reform in Tanzania is also changing the way surveillance information should be collected and used. Within reform, decision-making power and resources are being devolved to the district health management teams, thus the need for the use of health information system at the district level has grown. The effectiveness of a health information system at the district level depends on the ability of district level staff to utilise the information properly. Health sector reforms offer an opportunity for improving the capability to conduct surveillance and response activities by distributing more authority and responsibility to the district level.

The East African Integrated Disease Surveillance Network

The East African Integrated Disease Surveillance Network (EAIDSNet) was established in 2000. The vision of the EAIDSNet is to generate, provide and share evidence for joint action towards the prevention of disease outbreaks and spread within the region. The network has been developed in recognition of the need to strengthen national and regional capacities to prevent disease outbreaks and the spread of diseases within and between the partner states. EAIDSNet intends to (i) have effective systems to carry out disease surveillance activities, including prompt data collection, analysis, and ensure prompt appropriate action, (ii) to strengthen national and regional preparedness for prompt and effective response to disease outbreaks, and (iii) to develop mechanisms at national and regional level to prevent disease outbreaks in high-risk groups and displaced persons.

Many occasions disease outbreaks have spread from neighbouring countries due to free movements across common borders. Currently the East African member states, Kenya, Tanzania and Uganda, have mounted a

state of high alert and surveillance following the Ebola Haemorrhagic Fever outbreak in Uganda in September 2000. Such epidemics call for inter-country co-operation on disease surveillance to ensure prompt flow of information necessary for effective response.

Member states countries have already identified priority diseases for surveillance (Table 2) and established strong links between research, control, and policy and decision-makers. All member states are in the process of finalising and testing their national disease surveillance guidelines. The network has an established co-ordinating mechanism, with the Tanzanian National Institute for Medical Research, as the co-ordinating office. In future, the EAIDSNet plans to function and implement network activities through and with the support of the East African Community.

Discussion

Effective disease surveillance requires the choice of best effective tools, a clear and simple implementation process as well as highly motivated players. The integrated disease surveillance approach endeavours to simplify the HMIS and IDWE data collection tools by integrating the numerous and different data collection forms in use into a single package with multiple use. It tries to lessen the burden of those who collect information and provide for a unified data processing mechanism through which different needs of specific disease programme managers will be met.

However, even when the best tools are available their effectiveness may not be achieved at the highest level if the players in the whole process remain ignorant of the importance of the work they are doing. It is essential to identify and apply strategies to provide them with the necessary knowledge and skills. It is therefore, important to ensure that such knowledge and skills are refreshed periodically and that the personnel are motivated enough to allow for the sustainability of the system.

Secondly the players at all levels must be aware and able to use the information for improving their own work. The District Health Management Teams (DHMTs) must be able to use the information for planning and implementing health interventions and make it their priority to seek for better and valid information to do so. Whenever necessary, districts must be able to conduct simple research to find solutions in disease control or commission research to able institutions in cases where their own capacity are lacking.

Policy and decision makers at all levels must be able to demand for updated and valid information for decision making. This evaluation shows that most of these elements are lacking and to conclude we recommend that:

- The IDS system be monitored continuously to see whether it is operated correctly and whether it provides the desired outputs.
- The information from the monitoring process be used for prompt action to remove roadblocks in the provision of good and valuable disease surveillance data.
- Periodic training of the actors at different level be conducted and districts must be able to conduct such training within their jurisdictions.
- The appraisal process for actors at different levels includes assessment of the impact of their activities.
- Coverage of the weekly reports is maintained at highest level in order to provide comprehensive information that can be used for establishing trends and predicting epidemics.

The way forward for IDS in Tanzania should focus on training, review of data collecting tools, data management, analysis and use. Training of the surveillance teams in computer should be emphasised. Epidemic prepared-ness, outbreak investigation and epidemic response at all levels should be strengthened. Laboratory capacity should be established and strengthened at all levels.

Effective surveillance and control of epidemics require strong inter-country collaboration and information exchange within the Region. It is therefore, important that East African Community strengthens joint strategic plans for the prevention and control of priority communicable diseases in the Region. By linking with East African Health Desk, the EAIDSNet is expected to provide information for policy making and hence better co-ordination of activities at all levels within member states.

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Table 1: *Priority Diseases in Integrated Disease Surveillance Strategy in Tanzania*

Epidemic prone diseases	Disease targeted for elimination/eradication	Diseases of public health importance
Bacillary dysentery	Acute flaccid paralysis	Diarrhoea in children < 5 years
Cerebro-spinal meningitis	Neonatal tetanus	Pneumonia in children <5 years
Cholera		Malaria
Measles		Typhoid fever
Plague		
Rabies		
Yellow fever		

Table 2: *Priority diseases in East African Integrated Disease Surveillance Strategy*

Epidemic prone diseases	Disease targeted for elimination/eradication	Diseases of public health importance
Bacillary dysentery	Acute flaccid paralysis	Diarrhoea in < 5 years
Cerebro-spinal meningitis	Neonatal tetanus	Pneumonia in <5 years
Cholera	Bancroftian filariasis*	Malaria
Measles	Guinea worm disease*	Typhoid fever
Plague	Schistosomiasis*	HIV/AIDS
Rabies		Tuberculosis
Yellow fever		Trypanosomiasis
Viral haemorrhagic fever		Kala-azar*

* considered as second priority diseases