

Critique on the Methods Used by the Epidemiology Unit – Sri Lanka, To Ensure the Quality of Surveillance Data at Regional and Central Level – Reflective Writing

J. L. Himali R. Wijegunasekara

Deputy Director, De Soya Hospital for Women (Teaching), Colombo, Sri Lanka
Ministry of Health, Sri Lanka.

INTRODUCTION

The Epidemiology Unit was established in 1959 with the assistance of the World Health Organization (WHO) to strengthen surveillance of communicable diseases.

It is fully equipped with Epidemiologists who are qualified consultants in Community Medicine and Regional Epidemiologists (RE) deployed in all 26 RDHS divisions and Provincial Epidemiologists in Provinces.

Epidemiology Unit carries out its functions, with the vision of “Healthy people in a healthy Sri Lanka” and the mission “To promote health and quality of life by preventing and controlling disease, injury and disability”.

Its organizational structure is composed of specialized units responsible for; Policy development, Expanded programme of Immunization, Disease surveillance, Outbreak management, Training and teaching, Evaluation /Feedback, International health regulations, Rapid response in disaster management, Risk communication and Research.

Communicable disease surveillance which is one of the prime functions of this unit is referred to the continuing process of collection, analysis and interpretation of data to identify disease outbreaks early, to take control measures; and to monitor and evaluate public health programmes.

DESCRIPTION

Communicable disease surveillance is done for the surveillance of following diseases by the epidemiological unit: 1. Vaccine Preventable Diseases - DPT, Polio/AFP, Mumps, Measles/Rubella, Encephalitis, Meningitis, Chickenpox, Pneumonia, Rota V, HPV; 2. Water - born Diseases - Dysentery, Typhoid, Hepatitis; 3. Influenza; 4. Vector born diseases - Dengue, Chicken guinya; 5. Zoonotic diseases - Leptospirosis, Rabies, Leishmania, Typhus; 6. Emerging and re-emerging diseases.

Disease surveillance system consist of:

- Routine notification of communicable diseases

- Special surveillance on selected communicable diseases
- Sentinel site surveillance

1. Routine notification of communicable diseases:

In Sri Lanka, surveillance of communicable disease is based on notification of selected diseases by the Medical Officer who treats a patient. It is done with the probable diagnosis or with the suspicion, of a notifiable disease in the Notification form - H: 544. It is mandatory to report and it is a legal requirement according to the Quarantine and Prevention of Disease Ordinance of 1897. Notification thus made is sent to the MOH of the patient’s residential area. It is entered in the notification register by the MOH office and forwarded to the relevant PHI for investigation, confirmation and control the spread. PHI enters the findings in his infectious disease register, completes communicable disease report (H:411) and forwards H:411 with H:544 to the MOH within one week. It is entered in the Infectious Disease Register by the MOH and Weekly Return of Communicable Diseases (WRCD: H: 399) is prepared by the SPHI on behalf of the MOH and it is sent (along with H 411 for each case) to Epidemiologist with a copy to Regional Epidemiologist by post. Data, collected is entered in a central database at Epidemiology unit.

Thus, Sri Lankan communicable disease surveillance system is based on routine Weekly Return of Communicable Diseases by the MOH. 70% WRCD is received within 10 days. It covers all , 338, MOH areas in the country. It has a monitoring system at: Divisional, District and National level. WRCD is screened for clarity, timeliness and completeness at all three levels and at RE’s Quarterly Reviews. Further, it is connected with special surveillance for selected diseases.

2. Special surveillance on selected communicable diseases

Incidences and case based analysis of the following selected notifiable diseases are done by the Special Surveillance System. Separate investigation forms, to be completed by the

Critique on the Methods Used by the Epidemiology Unit – Sri Lanka, To Ensure the Quality of Surveillance Data at Regional and Central Level – Reflective Writing

Medical Officer treating the patient or by the MOH are available to collect information from every patient notified.

Diseases in special Surveillance system are: Cholera, All EPI Diseases (TB, Diphtheria, Pertusis, Measles, Polio /AFP, Neonatal Tetanus), Japanese Encephalitis, Dengue Fever, Human Rabies, Hepatitis and Leptospirosis.

3. Sentinel surveillance system

Sentinel sites have been identified to notify AFP, dengue, Hepatitis, Leptospirosis, Avian Influenza and notifiable vaccine preventable diseases. Active disease surveillance and lab surveillance are done at sentinel sites.

Communication / Feed Back:

Weekly Epidemiological Report and Quarterly Epidemiological Bulletin provide the feedback to both curative and preventive sector on surveillance of vaccine

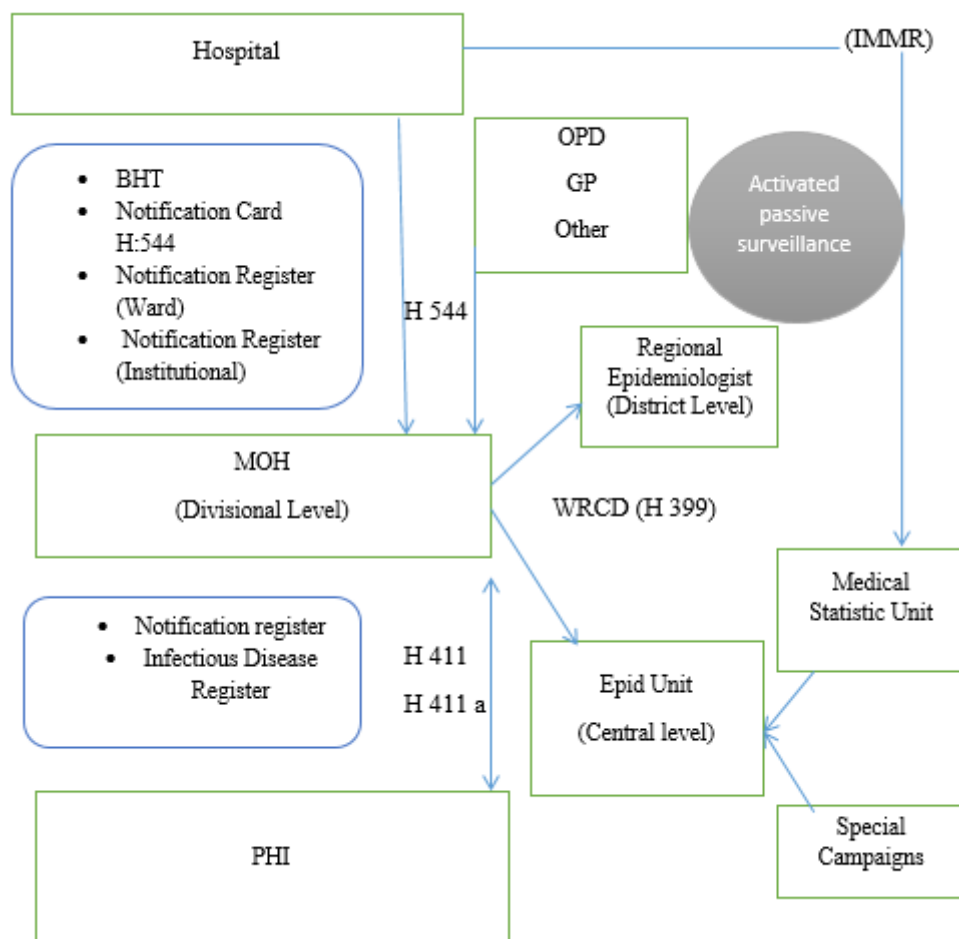
preventable diseases, selected notifiable diseases and newly introduced notifiable diseases. Both are available at the web.

To improve the timeliness, completeness and quality of data, a supporting web based e- surveillance system has been developed, based on the same method of paper based system. It is planned to replace the paper based system with the electronic system when it is implemented throughout the country.

In addition, Indoor Morbidity and Mortality Return prepared by the Medical Record department of all hospitals is sent to medical statistician in Quarterly manner. It is used to identify the morbidity and mortality pattern of diseases among In - patients. It is also shared with the epidemiological unit. Anyway, It is not used to identify out breaks of communicable diseases for control measures.

Finally, morbidity and mortality data collected from all the disease control programmes are also communicated with the Epidemiological unit.

Notification system



Feeling

I feel the notification system in Sri Lanka is a very comprehensive, well-established and a clear system which is having a necessary legal support for implementation. It starts with a probable diagnosis or a suspected communicable

disease, to minimize delays and missing cases, to take preventive and control measures rapidly. On the other hand, the long process due to its passage through PHI's investigation of all probable and suspected cases could delay the process, hence affecting the quality.

Critique on the Methods Used by the Epidemiology Unit – Sri Lanka, To Ensure the Quality of Surveillance Data at Regional and Central Level – Reflective Writing

I feel that the network of government institutions is adequate. However, Information regarding the disease burden should be collected from OPDs and from private sector health institutions to improve completeness.

Further, I feel that the actual disease burden may not be reflected with currently practiced “activated passive surveillance” and “passive surveillance” due to variation in the health seeking behavior of the people. Comparatively, “active surveillance” would capture a much higher number, who don’t reach health care facilities.

Additionally, I feel that the new initiative, “E - surveillance system” would be beneficial in combating the limitations in the paper based system and in the future previous system would be re- placed by E - surveillance system, providing better quality of data.

Evaluation

Following findings were identified as positive;

- Both paper based and E surveillance systems are functioning.
- It covers all, MOH areas in the whole island.
- Timeliness, completeness and data quality is closely monitored and reviewed both at all three levels and at RE’s Quarterly Reviews and public health staff is assessed for their performance.
- Responsibility is given to RE and MOH to supervise and be responsible for accuracy of data and they are monitored centrally.
- E surveillance systems has been developed to improve timeliness, completeness and data quality.
- Alarm system and dashboard systems have been introduced.
- Thresh hold levels have been introduced for vaccine preventable diseases.
- Auto calculation method is in place.
- E surveillance system is user friendly efficient data gathering process. It provides access to online information to regional epidemiologists and MOH officials and three way communication. early warning for detection of epidemic outbreaks. It also monitor the involvement of regional officials in surveillance. E surveillance increases the reliability with internal checks and alerts, consistency and integrity.
- Weekly Epidemiological Report and Quarterly Epidemiological Bulletin provide the feedback to both curative and preventive sector for action. Both are available in web.

Following findings were identified as gaps;

- Routine surveillance is not an active surveillance, but an Activated-passive and Passive Surveillance and it is limited to inward cases. There is only

minimum contribution from OPD. Patients admitted to the private sector hospitals are not considered in this notification process giving rise to limitations in data completeness. The actual disease situation may not be reflected in the current system.

- Timeliness is not very satisfactory. It can be observed that, there is a huge time gap between data collection and decision making which is about 10 to 14 days. Compliance is low in paper based system as only 70% timeliness is achieved. The validity, relevance and value of the collected data decreases due to undue delays in the process.
- E - surveillance systems has been developed to improve timeliness. Even with E surveillance, data entry occurs manually in the hospital, in MOH office and in PHI level until the MOH finally enters the details in weekly return of communicable diseases in the E - surveillance. It still causes delays in identification of outbreaks at an early stage.
- The shortage in computer literacy and internet literacy of the MOH and PHI officials can affect the compliance and data quality. Staff could be overworked having to complete two similar systems.
- There is lack of laboratory surveillance and limited use of information in Indoor Morbidity & Mortality Returns. The quality of surveillance data can be improved by using laboratory data, IMMR data and Vital statistics. There should be a mechanism to send the results of laboratory conformation of diseases to MOH, RE and Epid unit. This can also be incorporated into the E – surveillance.
- Data analysis is done only centrally at the EU. Therefore, peripheral level outbreaks are only evident when considerable number of cases is reported. Analyzed information is presented only as graphs and tables. If they are plotted on a map, spatial dimension could also help in better decision making on the spread of disease. MOHs and REs should be facilitated to analyze the information and increase their involvement in disease prevention activities in divisional level.
- The information and decisions are disseminated via WER and QEB published by Epid unit. Except it, there is lack of publication on epidemiological information at regional level or divisional level.

Analysis

Both paper based and E surveillance systems are functioning, in all 338 MOH areas in the whole island. It gives a complete picture of the incidence of diseases with geographic distribution. Legal cover has improved the compliance. Field investigation by the PHI results in quick control measures to be taken at the field level, even though it delays the process.

Critique on the Methods Used by the Epidemiology Unit – Sri Lanka, To Ensure the Quality of Surveillance Data at Regional and Central Level – Reflective Writing

“Case based special surveillance” of all the vaccine preventable diseases and other important communicable diseases amounting 15 diseases, augments the quality of routine notification system. Notification of cases and laboratory investigations in “sentinel site surveillance” from hot spots have further strengthen the timeliness and completeness of routine data.

E - surveillance has been introduced to improve timeliness, accuracy and completeness. WER provides a significant rapid “feedback” from the central level. Timeliness, completeness and data quality is closely monitored and reviewed at all three levels. Public health staff is assessed for their performance at RE’s Quarterly Reviews. Paper based system provides a back up system till the E surveillance is fully stabilized in the country.

Threshold levels for vaccine preventable diseases; alarm system; and dashboard systems have been introduced boosting quick action.

E - surveillance system is easier to use and it was developed by the public health experts. It has overcome practical issues emerged in previous instances. It is expected to replace the paper based system to reduce the work load while maintaining the quality of data.

All rights, for the E surveillance are owned by Epidemiology unit and maintenance cost is also minimal as repairs are done by our own staff. The most essential benefit is that data is secured from international manipulations.

Auto calculation method reduces errors. Computer mistake proofing gives a warning if irrelevant or wrong inputs are entered. MOH and RE are personally held responsible for accuracy of data and their supervision is monitored centrally. Immediate feedbacks are given for improvement. Audits are conducted to ensure all three aspects of data quality. Registers, Reports and Returns handled and review meeting held monthly, quarterly and annual at Divisional level, District level and Nationally to ensure quality of data.

Epidemiology unit is having a stock of back up computers and dongles received from donors which may be distributed during crisis situations to ensure sustainability.

Quick dissemination of information is essential for efficient control of communicable diseases and delays in receiving the data in notifications its validity and can badly affect the disease prevention and control activities.

There is a possibility of unsupervised data being submitted and being unnoticed, centrally by the paper based system which is prevented by the E Surveillance system. However, Inadequate IT knowledge amongst health staff and constant break down of computers and interrupted web facilities could induce a threat on data quality.

Routine system does not have active surveillance and it is only activated passive and passive surveillance. In addition, lack of laboratory surveillance and lack of integration of information in Indoor Morbidity & Mortality Returns may

not reflect the true picture. Notification is almost limited to inward cases and minimum contribution comes from OPD due to poor compliance and Private sector.

It can be observed that, there is a huge time gap between data collection and decision making which is about 10 to 14 days. This needs to be improved as this could delay action against communicable diseases.

As there is lack of publication on epidemiological information at district level, they may not have the true situation of their district other than their own MOH area. The only immediate feedback is from WER from central level. This can lead to delay in actions taken.

I think the completeness of data can be improved if the responsible staff in the curative sector (in wards, OPDs and private sector is made aware of the importance of notifications which affects the accuracy of data used nationally for evidence based decision making. Despite the legal cover, curative sector staff is not adhering to the regulations because of not having proper monitoring, performance reviewing, evaluation or punitive procedures practiced in Sri Lanka. In the hospitals sole responsibility has been given to the infection control nurse who is not reaching the OPDs.

Lack of public health exposure, hence the unawareness of the principals managing the public health sector, among medical staff working in the curative sector and their supervisory staff has led to this deficiency.

The quality of surveillance data at regional and central level can be improved by using laboratory data, IMMR data and Vital statistics. This can be done by introducing the “e – surveillance” to the laboratories also.

CONCLUSION

There is considerable, appreciable effort being taken at central and regional level in maintaining the quality of data, however the time taken for action could be further improved and staff should be further motivated.

RECOMMENDATION

- To minimize the time gap between data collection and preventive and control actions minimizing the disease spread.
- Improve laboratory diagnostic facilities to confirm cases and thereby improve the time taken for action.
- Increase awareness amongst health staff on importance of data quality.
- Backup stock of computers and dongles should be provided to district level which could be used during crisis.
- Give IT training to grass root level healthcare workers involved

Critique on the Methods Used by the Epidemiology Unit – Sri Lanka, To Ensure the Quality of Surveillance Data at Regional and Central Level – Reflective Writing

- E-mails and SMS alerts can be introduced to take quick action. SMS needs only mobile phones which reduce the need of computers by the field staff.
- Enforcing rules for data entry forms to increase the quality of data
- At least 6 months internship period could be introduced to intern medical officers in the preventive sector, to be familiarized with the preventive and promotive programmes conducted in public health sector.

REFERENCES

- I. DISEASE SURVEILLANCE PROGRAMME IN SRI LANKA; Dr Samitha Ginige Consultant Epidemiologist Epidemiology Unit; Sri Lanka. Available at <http://lirneasia.net/wp-content/uploads/2008/08/ginige-disease-surveillance-chennai.pdf>
- II. W.M.A.S.B. Wickramasinghe et. al.(2010); “Design of Nivāraṇa: The power of information in prevention of epidemics”; Sri Lanka Journal of Bio-Medical Informatics; 2010;1(3):169-78. Available at \file:///C:/Users/3C%20Tech/Downloads/1767-7402-1-PB.pdf