

Gaps in the communicable disease notification system; evidence from a major tertiary care hospital, Sri Lanka

P. Karthikeyan¹, A.D.N. Jayathilake², S.M Arnold³

^{1,2,3} Ministry of Health, Sri Lanka

DOI: 10.29322/IJSRP.12.03.2022.p12313

<http://dx.doi.org/10.29322/IJSRP.12.03.2022.p12313>

Paper Received Date: 11th February 2022

Paper Acceptance Date: 27th February 2022

Paper Publication Date: 4th March 2022

ABSTRACT

Background: National Hospital of Sri Lanka (NHSL) is the apex center for tertiary care and caters patients from all regions of Sri Lanka. It is imperative that notification system at NHSL be rigorous to capture all suspected cases of Notifiable Diseases (NDs), in order to strengthen early detection and implement timely preventive actions.

Methods: A descriptive study was carried out to identify the issues of disease notification process at NHSL. All medical wards of NHSL were included with the objective to assess the current performance status of disease notification process. Key Informant Interviews, Focus Group Discussions, Direct observations using a checklist and Self-Administered Questionnaire were used as study instruments. Gap between notified and diagnosed NDs in each ward were identified. Performance of wards with equal or more than 75% gap were classified as poor.

Results: The study revealed that six major gaps leading to poor performance of the notification process was: Non availability of notification registers and discharge registers in the wards, lack of a systematic mechanism to daily monitor the gaps between diagnosed NDs versus notified NDs, absence of visual reminders to initiate the notification process, lack of a mechanism to monitor the performance of notification process and feedback to the managers, lack of knowledge about importance of notifications, and lack of regular supervision.

Conclusion: There are major gaps in the disease notification in medical wards of the National Hospital of Sri Lanka.

Key words – Disease notification, Medical wards, Notifiable diseases

I. INTRODUCTION

A notifiable disease is identified as a disease for which regular, frequent, and timely information regarding individual cases is considered necessary for the prevention and control of the disease.¹

Surveillance is the ongoing systematic collection, analysis, and interpretation of outcome specific data for use in planning, implementing and evaluating public health policies and practices.

A communicable disease surveillance system serves two key functions; early warning of potential threats to public health and programme monitoring functions which may be disease specific or multi-disease in nature.² The early warning functions of surveillance are fundamental for national, regional and global health security. Outbreaks such as avian influenza and dengue demonstrate the importance of effective national surveillance and response systems.³ The International Health Regulations (IHR) 2005 request all member states to establish and implement effective surveillance and response systems to detect and contain public health threats of national and international importance.⁴

Notifiable disease surveillance system in Sri Lanka consists of routine notification of communicable diseases, special surveillance on selected communicable diseases and sentinel site surveillance. Notification of communicable diseases is a

legal requirement in Sri Lanka since 1897. List of notifiable communicable diseases are declared and medical practitioners or person professing to treat diseases have to report to the area Medical Officer of Health (MOH) using a prescribed format. Any person who contravenes this regulation shall be guilty of an offence and such person shall be prosecuted in Magistrate Court⁵.

The compiled report of notifiable disease is submitted weekly (Weekly Report of Communicable Diseases – WRCD) by the MOH Office to the Regional Epidemiologist which is the district focal point in communicable diseases and to the Epidemiology Unit of the Ministry of Health. The Epidemiology Unit being the national focal point in communicable diseases receives around 95% WRCD within 10 days. Data collected is entered in a central database at the Epidemiology Unit. Feedback information on notifiable diseases is communicated through the Weekly Epidemiological Report and Quarterly Epidemiological Bulletin both of which are available at website of the Epidemiology Unit.^{5,6,7}

Notifiable disease data are used by medical administrators for monitoring disease trends, program planning, evaluation, policy development, research, and assessing the effectiveness of prevention and control activities. Notifiable disease surveillance data is also important for medical administrators to protect the public's health by ensuring proper identification and follow-up of cases, which generally takes place at the local level and is necessary to employ recommended control measures as well as helping to improve health department distribution of limited resources for targeted investigations and interventions.

Under reporting is acknowledged as the main and serious limitation in disease notification system especially in the developing countries.¹ WHO joint assessment report following the comprehensive assessment of national surveillance systems in Sri Lanka stated that “from the in-patients too, a considerable proportion of the cases diagnosed as having any one of the notifiable diseases do not find their way into the notification system and this may vary from disease to disease and from one level of health facility to another.”⁸ The report further recommended that notification procedures and practices should be consolidated through managerial and supervisory inputs at all levels of the health system.

Problems related to disease reporting system are in three levels; the Reporter level, Process level and Recipient levels.⁹ A review done among hospitals in the Gampaha district, Sri Lanka found that though a majority (90%) of them knew the notifiable diseases but only a few of them (3.2%) always performed notifications. Around 78% of doctors believed that no actions were taken at MOH office or preventive health authorities for the disease notified.¹

II. METHODS

A hospital-based descriptive study was conducted in medical wards of the National Hospital of Sri Lanka to identify gaps in disease notification and assess the existing performance status of disease notification.

Interviewer Guides, Focus Group Discussion Guide, Observational Checklist and Interviewer Administered Questionnaire were developed after an extensive review of the literature^{10,11, 12, 13, 14, 15, 16} and inputs from the experts in the field. Data extraction format was used to gather additional information, from ward notification registers and discharge bed head tickets (BHTs). The study was conducted during the period October – December 2019. Percentage gap between notified and diagnosed NDs identified were classified as, poor, medium and high performance.

The following quantitative and qualitative research methods were employed to identify the gaps and issues in disease notification process.

- Key Informant Interviews (KIIs) were held with the Deputy Director General, Deputy Director, Chief Nursing Officer, Consultants (Medicine and Microbiology), Medical Officer (Public Health), Medical Officer (Quality Management Unit) and Medical Officer (Infection Control) using the ‘Interviewer Guide’.
- Focus Group Discussions (FGDs) was conducted with group of House Officers (HOs) in selected Medical Units (n=05) and, Section Matrons, Ward Sisters/Nursing Officer in Charge and Nurses of selected Medical Units (n=10) using the ‘FGD Guide’.
- Observations – using an observational checklist.

- Data extraction on documentation - perusing ward notification register, discharge register and Bed Health Tickets using data extraction tool.
- Surveys - with Medical Officers and Intern House Officers (n=10), Ward Sisters/NOICs and Nurses of selected Medical Units (n=41) using two separate structured self-administered questionnaires.

The study population consisted of the Deputy Director General, Deputy Director and Chief Nursing Officer (n=3), Consultants (Medicine and Microbiology) (n=3), Intern House Officers (HO's) in selected Medical Units (n=10), MO Public Health (MO PH) , MO Quality Management Unit (MO QMU) and MO infection control (n=3), Section Matron, Ward Sisters/NOICs (n=3), Nurses of selected Medical Units (n=45), and Public Health Inspectors (n=4) from NHSL.

The following process indicators were used

Table 1: Indicators used to measure the gaps and issues in notification process

No	Indicator	Measuring instrument
1	Separate ward disease notification register	Checklist/ Questionnaire
2	Separate ward discharge register	Checklist/ Questionnaire
3	Gap between both registers	Checklist/ Questionnaire
4	Daily gap analysis report	Checklist/ Questionnaire
5	Weekly performance report	Checklist/ Questionnaire
6	Regular supervision by managers	Checklist/ Questionnaire

III. RESULTS

A retrospective evaluation of disease notification process at NHSL using the checklist was conducted. There are 17 Medical wards (14, 41,42, 43,44, 45,46,47a, 47b, 48a, 48b, 49, 50,55,56a, 56b,83) at NHSL, divided into 3 blocks. 1st, 2nd and 3rd medical blocks. NHSL is having an outpatient department (OPD) as a separate unit. Data on notifications made for each notifiable disease from inward notification register as well as the discharge register in each unit were recorded.

In one ward, there was no inward notification register. Reason given was that it is the casualty ward. In another ward, the notification for year 2018 started from 11.05.2018. It was observed in a medical ward that after 2016 there is no notifications registered in the inward notification register.

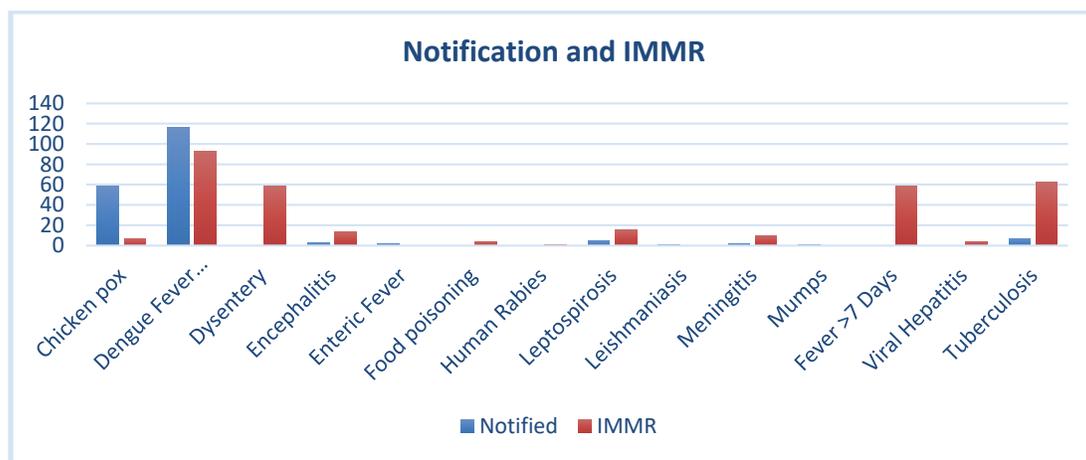
Commonly in all medical wards, discharge register was maintained but there was no uniformity in the data entered. On and off discharge diagnosis get recorded in a ward and among the data entered there were discrepancies such as notifications less than the notifiable diseases in the discharge register. In some wards the discharge diagnosis was not entered. In the wards and OPD it was informed that since June 2018 there is a separate register for notifying the TB patients directly to the TB campaign, but Epidemiology unit is not aware about this.

Table 2: Notification in medical wards of NHSL

Ward Number	Total Diagnosed	Total Notified	Gap (%)	Performance
A	06	00	100%	Poor
B	12	03	75%	Poor
C	15	00	100%	Poor

D	27	12	56%	Medium
E	31	18	42%	Medium
F	23	11	52%	Medium
G	28	21	25%	Medium
H (A)	26	13	50%	Medium
H(B)	27	22	19%	High
I (A)	20	17	15%	High
I(B)	21	16	24%	High
J	19	9	53%	Medium
K	17	14	18%	High
L	23	12	48%	Medium
M (A)	27	19	30%	Medium
M (B)	15	8	47%	Medium

The diagnosis of diseases (morbidity) and cause of death (mortality) are entered in the Indoor Morbidity and Mortality Register (IMMR). The notifiable diseases entered in the hospital IMMR and the actual notification made is presented in figure 1. Disease conditions dysentery, food poisoning fever more than 7 days viral fever were not notified. There were discrepancy of the data entered in the IMMR and actual notification in disease conditions chicken pox, dengue fever, encephalitis, leptospirosis, meningitis and tuberculosis. Enteric fever although notified was not entered in the IMMR. Mumps were not notified or entered in the IMMR.



IMMR – Indoor Morbidity and Mortality Register

Figure 1: Notification and entry in the IMMR

Gaps in notification process and practices

Through Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) following issues/gaps in existing notification process of NHSL were identified.

Following are the key issues identified after the of KII

1. Heavy workload in the wards affected the ability of nurses to maintain a discharge register and to update the notification register.
2. Lack of teamwork combined with the lack of interpersonal relationships between different categories of healthcare staff.
3. Lack of attention given by specialists to see whether notification process is properly done in the ward.

Following are the key issues identified after the of FDG

House Officers

1. Notification work was considered unimportant, so ignored the disease notification.
2. Continuous close monitoring and repeated reminders ensured to promptly notified regarding the Dengue fever.
3. Notification was perceived as done merely for statistical purposes and was not used for disease surveillance.
4. Mis concept that notifications should be done only after the final diagnosis made.
5. Availability of visual chart listing the notifiable diseases in the ward would facilitate the notification by acting as a reminder to notify diseases.

Nursing Officers

1. Daily updates of the ward notification register were not assigned to anyone. This was the reason for not updating ward notification register daily.
2. Handing over the responsibility for the notification to nurses will improve disease notification

Table 3: Availability of selected measures for notification

	Measure	Availability
1.	Notification forms (H544) available in all wards	No
2.	Ward notifications register available in all wards	No
3.	Ward discharge register is available	No
4.	Visual reminders to initiate the notification process is available in wards	No
5.	Systematic feedback mechanism for MOs and HOs on gaps in notification is available	No
6.	Availability of a systematic mechanism to send feedback to managers on performance of notification process	No

IV. DISCUSSION

A notifiable disease is identified as a disease for which regular, frequent, and timely information regarding individual cases is considered necessary for the prevention and control of the disease.¹ The NHSL is the apex center for tertiary care in the country, receiving patients from all regions of Sri Lanka. It means the surveillance system at NHSL should be rigorous enough to capture all suspected cases of notifiable diseases. However, this study discovered that disease notification process at NHSL was having significant gaps.

The issue of not writing notifications and delays in the process indicated that lack of supervision by middle level and top-level managers was one of the main reasons for gaps in the disease notification process. Results of KIIs and FDGs revealed more details of the process and practices of disease notification and reasons for gaps. During FDGs, most of the HOs mentioned that they did not give propriety for disease notification because it has no use. Almost all HOOs mentioned that there were frequent shortages of notification forms (H544) in wards. In agreement with that, the NOs also mentioned that some wards not having ward notification register too.

In response to the question whether there is a systematic mechanism to access daily gap between the notified and diagnosed notifiable disease, the HOOs mentioned that there was no systematic process for finding those gaps. NOOs also stated that

the information regarding daily gaps were not readily available for them. Furthermore, they reiterated that there was no proper mechanism to access gaps in the daily notification.

When they were inquired whether these shortcomings had adversely affected disease notification process the majority agreed that there was adverse effect.

The majority was unhappy with the pre-interventional mechanisms to access the gaps in notification and stated there is no systematic mechanism to feedback the performance to their superiors. Further, they emphasized the importance of availability of a mechanism to feedback the performance.

During the FDG, a senior medical administrator of NHSL mentioned that the treat huge amount of notifiable disease at NHSL annually and there was no proper monitoring and feedback on the performance of notification process. There was lack of teamwork and good interpersonal relationships are currently deteriorating compared to the past which directly affect the disease notification process. Trade unionism as a root cause for deterioration. Another Medical Administrator of NHSL stated that there are issues in disease notification but not attempt had been made to find the reasons for that. There was no focus on monitoring and supervising the disease notification process.

Consultant microbiologist stated that disease notification is totally neglected area in NHSL. A Consultant Physician was of the view that notification is the responsibility of the head of the institution. Medical Officer in charge of preventive health too accepted that disease notification is not regularly happening from wards and there is no monitoring mechanism. He acknowledged that he never supervised disease notification as it is under infection control. The doctor responsible for Infection Control Unit stated the performance of the process of disease notification is not satisfactory and there was no mechanism in place to monitor the disease notification process. The notification process had not been supervised by any one.

Senior nursing administrator revealed that large number of notifiable diseases are not get notified from the wards. The Chief Nursing Officer stated that heavy workload in the wards prevent nurses to maintain a discharge register and update the notification register. Discharge registers are also not get daily updated due to workload. The Section administrator of nurses in a medical ward complex also stated that there were issues in daily disease notification. Even though infection control nurses are preparing a summary report weekly, it is not widely circulated and not shared with consultants or HOOs. It is circulated only among the nurses and that too was not done systematically.

The checklists and surveys were used to quantitatively evaluate practices and perceptions at the operational level regarding the disease notification. Out of 14 notifiable diseases in the IMMR, Dengue and Chicken Pox were notified more than IMMR. All other 12 diseases were reported less than IMMR (Under reported). Specially TB, Dysentery, Leptospirosis and Meningitis are very much underreported. It means the preventive health sector receives incomplete information regarding infectious diseases from the national hospital.

The preventive health officials are responsible for surveillance, investigation, control and prevention of notifiable infectious diseases. For effective overall management, adequate resources (men, money, machines, methods and materials) must be available. Resources are limited in developing countries.¹ Notifiable disease surveillance data is vital to protect the public's health by ensuring the proper identification and follow-up of cases, which generally takes place at the local level and is necessary to employ recommended control measures as well as helping to improve health department distribution of limited resources for targeted investigations and interventions.

The NHSL is the apex centre for tertiary care in the country. This hospital receives patients from all the regions of Sri Lanka. It means the surveillance system at NHSL should be rigorous to capture all suspected cases of notifiable disease to detect the infectious diseases early for preventive actions on time. Any gap in this process will lead to a disease outbreak in the country. Controlling the disease outbreak is costly, and a severe impact on the country's health system and the economy will be the consequences.

Medical Administrators use notifiable disease data for monitoring disease trends, program planning, evaluation, policy development, research, and assessing the effectiveness of prevention and control activities. Therefore, the delay or no reporting of notifiable disease will affect the health system too. Further, NHSL is the teaching hospital where medical

students and nurses, midwives, and paramedics undergo their undergraduate and postgraduate training. Hence, this institution must have an exemplary disease notification system for this trainee to learn it and later practice it.

The NHSL is having a dedicated infection control unit with 12 permanent nursing officers under the supervision of Medical Officer, Microbiology. Even with these resources it was observed that the notification process is showing larger variations. This is clear evidence that there is a gap in disease notification process at the NHSL.

Leadership at central and peripheral levels is most important to nourish ownership of the programme and partnerships within the health care sector and others hold the key. This has to be done from top level administration to the level at the operational level. One such activity is Supervisory visits as such are not regularly planned activities at most senior levels.

Knowledge of disease notification among HOs is poor due to high turnover as every six months new batch of HOs are changing over the units. Co-ordination between the HO's and notification nurse was also a problem. At the time the notification nurse visited the ward, the IMO was often busy and, on several occasions, had forgotten quite a few patients who should have been notified. Thus about 30-40% of notifiable diseases were still not get notified.

Our questionnaire survey found that a majority of HOs and NO's possessed adequate knowledge of the notification system and how it worked. However, most of the time they did not notify diseases. FDGs and KIIS revealed that lack of time, forgetting to notify, and the assumption that, even if they did notify, no community action would result from the notification were the predominant reasons given for this.

It seems that there is a lack of communication between the curative and preventive health sectors. HOs in a curative setting assume that hardly any community action occurs even if they notify, while effective preventive action is being taken in the community concerning the few notifications received.

V. CONCLUSIONS

The study revealed that there are major gaps in the disease notification process at NHSL. It was found that there were no systematic mechanisms to access the performance of disease notification process and most of the House Officers and Nursing Officers were not satisfied with the existing mechanisms which was not effective.

The NHSL is the apex center for tertiary care in the country. This hospital receives patients from all the regions of Sri Lanka. It means the surveillance system at NHSL should be rigorous to capture all suspected cases of notifiable diseases in order to detect the infectious diseases early for preventive actions on time. However, the gaps identified indicate that preventive health sector is receiving incomplete information regarding infectious diseases from the National Hospital which will have a negative impact in the disease control activities. Further, being a teaching hospital for medical students, doctors, nurses, midwives and paramedics providing undergraduate and postgraduate training should have a proper mechanism of disease notification where the trainees obtain firsthand experience in proper disease notification. However, this is lacking at the NHSL leading to the trainees not getting proper training on notification which can have a negative impact in the future when these trainees practice in the hospital setup.

REFERENCES

1. Ofili, A.N, Zea E.N.U.A. 2003. Knowledge of disease notification among doctors in Government hospitals in Benin City, Edo State, Nigeria. *Journal of Royal Institute of Public Health*, (117), pp.214-17.
2. Ali Janat, M.H. 2015. Communicable disease reporting system in the world: a systematic review. *Iranian Journal of Public Health*, 44(1), pp.1453-65.

3. Disease Control Priorities in Developing Countries, 2006, 2nd edition, Chapter 53
4. Epidemiology Unit. 2011. Surveillance Book. Available at:
http://www.epid.gov.lk/web/images/pdf/Publication/Surveillance_book.pdf
5. Epidemiology Unit, 2012. List of Notifiable Diseases. Available at:
https://www.epid.gov.lk/web/index.php?option=com_content&view=article&id=145&Itemid=446&lang=en
6. Ginige, S. 2012. Disease Surveillance Programme in Sri Lanka. Available at:
http://www.kln.ac.lk/medicine/depts/publichealth/Fixed_Learning/Surveillance/Surveillance%20of%20notifiable%20Diseases%20in%20Sri%20Lanka/Notifiable%20Disease%20surveillance.pdf.
7. Henrique Freitas, M.O.M.J. 1998. The focus group, a qualitative research method. Research paper. Merrick School of Business, University of Baltimore.
8. The International Health Regulations (IHR) 2005, 3rd edition. Available at
<https://www.who.int/publications/i/item/9789241580496>
9. Palihawadana, P., 2011. Surveillance Case Definitions for Notifiable Diseases in Sri Lanka. Publication. Colombo: Ministry of Health Sri Lanka Epidemiology Unit.
10. Jones, C. n.d. Advantages and Disadvantages of Qualitative & Quantitative Research. [Online] Leaf Group Ltd. Available at: <http://peopleof.oureverydaylife.com/advantages-disadvantages-qualitative-quantitative-research-6184.html> [Last accessed July 2020].
11. Kalpana Chandrasekar. 2013. Notifiable disease surveillance system in Sri Lanka and United Kingdom- a comparative study. Sri Lanka Journal of Biomedical Informatics., 4(1), pp.14-22.
12. Predrag Duric. 2012. Participation of infectious disease surveillance in Primary health care. Sri Lanka Journal of Infectious Disease, 2(2), pp.37-46.
13. Public Health Surveillance: A Tool for Targeting and Monitoring Interventions. New York: Oxford University Press; 2006. ISBN-10: 0-8213-6179-1.
14. Seneveratne, S.L. 1997. Reporting Notifiable diseases, Methods for Improvement, Attitude and Community Outcome. Transactions of Royal Society of Tropical Medicine & Hygiene, 91(2), pp.135-7.
15. Taun, K. 2005. Surveillance case definition for Notifiable diseases in Sri Lanka. 1st Edition. Epidemiology Unit, Ministry of health, Sri Lanka
16. USAID, 1996. USAID Center for Development Information and Evaluation, Performance Monitoring and Evaluation TIPS Available at: http://pdf.usaid.gov/pdf_docs/pnabs541.pdf
17. WHO. 2004. A Comprehensive Assessment of National Surveillance system of Sri Lanka. Joint Assessment report. New Delhi: WHO-SEARO WHO-SEARO. Available at
<https://apps.who.int/iris/bitstream/handle/10665/204892/B0177.pdf?sequence=1&isAllowed=y>
18. WHO. 2006. Communicable disease surveillance and response systems. Epidemic & Pandemic Response. Geneva: World Health Organization