

Review

A critical review of the infectious diseases surveillance system in the Gaza Strip

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SUMMARY The development and strengthening of national surveillance systems is a key part of communicable disease control. This review article describes and evaluates the Palestinian surveillance system and discusses the role of the epidemiology departments and other health providers in Gaza Strip in reporting infectious diseases, considers the use of the data collected, and makes recommendations for strengthening infectious diseases surveillance. Underreporting of infectious diseases remains a major problems in communicable diseases surveillance. Recommendations include: the unification of the reporting forms between different health providers, increased involvement of health providers in reporting of infectious diseases, and complete separation of surveillance and clinical activities in epidemiology departments.

Introduction

The important role of surveillance in reporting, monitoring and responding to infectious diseases has been repeatedly stressed by the World Health Organization (WHO) [1]. In 1995, the 48th World Health Assembly's resolution on the control of emerging diseases re-emphasized this and urged Member States to strengthen national programmes of surveillance for infectious diseases and their causative agents [1].

Epidemiological surveillance has been defined as "the ongoing and systematic collection, analysis and interpretation of health data in the process of describing and monitoring a health event" [2]. The development and strengthening of national surveillance systems is a key part of communicable disease control. It requires a substantial and long-term commitment of human and material resources, usually beginning with a systematic assessment of national

surveillance activities. This should lead to a national plan for the surveillance of communicable diseases [2].

Disease surveillance has two basic components: 1) an information system that provides data on the occurrence of the disease under surveillance in terms of time, place and person; and 2) an outbreak and epidemic investigation system that collects and analyses information on why an outbreak occurred, how it can be controlled and how it can be prevented from occurring again [3].

The main goal of the Palestinian health care system is to improve the health status of the Palestinian people [4]. Achieving this goal is difficult without accurate information about health and disease in the Palestinian population [4].

Since 1940, Palestinian law has required the notification of infectious diseases and the list of notifiable diseases has since been amended several times. In September

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1994, an epidemiology department was established in Gaza city consisting of a doctor, a nurse and a veterinarian [5]. In 1996, an epidemiology unit was established in Khan Younis to serve the southern districts. Other districts in the North and Mid-zone have no epidemiology units and the local health officers are responsible for reporting infectious diseases. The suggested tasks of an epidemiology department are: coordination of national surveillance activities; analysis of epidemiological data in terms of epidemiological links, trends and achievement of control targets; outbreak control; and feedback to the periphery and reporting to decision-makers [2].

The Primary Health Care (PHC) Directorate recommends that different health providers must report cases of selected diseases to an epidemiology department. Criteria to be considered for placing a disease under surveillance were outlined and include: the magnitude and impact of the disease in terms of morbidity, mortality and disability; potential for outbreaks; potential for case prevention and community protection actions; whether International Health Regulations require the disease to be reported; and whether the disease is under WHO surveillance or is covered by special national eradication or elimination programmes [2].

Public health officials rely on health providers, laboratories and other public health personnel to report the occurrence of infectious diseases to epidemiology departments. Without such data, monitoring trends or evaluating the effectiveness of interventions would be difficult.

The recent establishment of the Palestinian Authority has increased movement both into and out of Palestine. This movement, together with demographic issues, has direct and indirect effects on prog-

rammes to prevent and control infectious disease [6].

The Ministry of Health (MOH) is the main provider of health services. It covers approximately 60% of the population in Gaza Strip [7]. The United Nations Relief and Works Agency for Palestinian Refugees in the Near East (UNRWA), nongovernmental organizations (NGOs), the private sector, and the military and police health sectors provide health services to the remainder of the population [7].

In Gaza Strip there are 9 hospitals: 5 government hospitals and 4 NGO-run hospitals. Of these, 5 are located in Gaza city [8]. In addition, there are 35 community health centres operated by MOH distributed throughout the area to ensure access to services [7]. UNRWA has 17 community health centres located in the refugee camps, providing health services for all refugee populations in the area free of charge and with no expectation of health insurance cover. Finally, there are 40 mini-PHC centres operated by NGOs and many private health clinics that provide health services to the Palestinian people [9].

The Palestinian health authorities have succeeded in the prevention and control of many infectious diseases. No cases of schistosomiasis, leprosy, diphtheria, plague, poliomyelitis, rabies, relapsing fever or malaria have been reported in recent years [10]. Other infectious diseases, such as meningococcal meningitis, brucellosis, AIDS/HIV, hepatitis, tuberculosis, diarrhoea, pneumonia and parasitic infestation remain challenges. Regular notification is needed for the success of their prevention and control programmes [10].

Since 1997, the monthly epidemiology report for Palestine has been collated and published from Ramallah. Deficiencies in the data currently collected and delay in

making the monthly reports concerning infectious diseases have been observed in Gaza Strip.

This review article has four objectives: first, to evaluate the success of the surveillance system and to discuss the role of the epidemiology departments and other health providers in Gaza Strip in reporting infectious diseases; second, to describe the existing surveillance system and the constraints it faces; third, to describe the use of the data collected by epidemiology departments; and fourth, to make recommendations for strengthening the surveillance of infectious diseases.

Critical review

Communicable disease surveillance

Prior to 1995, the governmental health services in the West Bank, Gaza Strip and the UNRWA health services all operated separate surveillance systems. In 1995, the West Bank and UNRWA health surveillance systems combined and in 1996 merged with the Gaza Strip system, so that in theory Palestine has a single surveillance system [11]. However, because of the political unrest and other constraints, such as difficulties in communication between the West Bank and Gaza Strip and the different organizational structures involved, in practice the surveillance system is not yet fully unified.

In Gaza Strip, 3 weekly reporting forms are compiled by hospitals, PHC centres and laboratories. UNRWA has one reporting form for weekly and another for monthly infectious disease reports (H. Abu Musa, personal communication, 1998). The reporting forms have three groups of diseases: Group A, which includes diseases where every case should be notified by

telephone or fax within 24 hours and investigation initiated within 24 hours in order to control the spread of the disease immediately; group B, which includes diseases where every case should be notified and investigated, but with less urgency (within 1 week); and group C, which includes diseases for which investigation is not required for every case and notification is made within 1 month. The case notification form is used for the important infectious diseases in group A in addition to brucellosis, typhoid and pulmonary tuberculosis.

The system of infectious diseases reporting is centralized and consists of the central epidemiology department in Gaza city, which has a computer and uses a spreadsheet to record surveillance data and *Epi-Info 6* to record some diseases for specific surveillance (e.g. meningitis and brucellosis), but stores other data manually. The epidemiology unit in Khan Younis stores and manipulates the data manually and transfers it each month by hand to the central epidemiology department in Gaza city. The other three districts operate a manual surveillance system and transfer the data monthly by hand to the central epidemiology department.

The central laboratory, PHC laboratories and hospital laboratories report monthly to the central epidemiology department. For UNRWA, a weekly epidemiology form covering infectious diseases is collected by hand from PHC centres and stored using *Epi-Info 6* where a database on infectious diseases is present, and the monthly report is transferred manually to the central epidemiology department (H. Abu Musa, personal communication, 1998). Therefore, one of the main problems facing communicable disease surveillance in Gaza Strip is the number of different health care providers. On the other hand, reporting from NGOs is

very limited and the private sector is not yet involved in surveillance activities. In this survey, the underreporting from different health providers other than UNRWA was 59%. About 44% made no return reports to the central epidemiology department in the last 3 months of 1998, leading to the monthly epidemiology reports being unrepresentative and delayed. In UNRWA, the degree of underreporting was about 40%. Therefore, cooperation between the governmental health system, NGOs and the private sector is still inadequate, and further efforts are needed to develop it. In addition, other health providers, such as the military and police health services, do not usually participate in the national surveillance system, although they cover a large sector of the population.

For the group A diseases, which need immediate notification, hospitals telephoned the epidemiology department and then sent a separate notification form by fax to the General Directorate of PHC or to the PHC nurse office, as there was no fax machine available in the epidemiology department. In general, there was no obvious underreporting in this group of diseases.

List of notifiable diseases

There is a list of 51 notifiable diseases in Palestine and 55 notifiable diseases in Gaza Strip, while UNRWA lists only 29. Therefore, unifying the list of notifiable infectious diseases is essential to improve the surveillance system.

It is obvious that using the same definition and criteria to diagnose a reportable disease within and between countries is a prerequisite for diagnostic accuracy and consistency of data reported by different health facilities [1]. In Gaza Strip, there were no clear criteria for identifying cases; health providers have used various criteria for case reporting. Recently the central ep-

idemiology department prepared three new forms for infectious disease reporting, additional to the notification form and guidelines on case definitions for public health surveillance. Implementation of these new items requires effort and more time is needed to evaluate their effect on improving infectious disease reporting. Epidemiology department staff also made field visits to different health providers.

Information flow

The information flow for infectious diseases reporting in Gaza Strip is more centralized as only two districts there have epidemiology units. In the last 3 months of the period covered by this review the epidemiology departments did not send any feedback reports to health providers.

The monthly report is produced in the middle of the relevant month by the epidemiology department and then sent to: 1) the General Directorate of PHC, 2) the health information department, and 3) the central epidemiology department in Ramallah, where a monthly national epidemiology report is produced.

Data collection and analysis

A strong central unit is needed for effective surveillance. However, this should never hinder the process of analysis and interpretation of data at different levels in the health system, and especially at the peripheral level [1]. For the North and Gaza districts, data are collected from PHC centres, laboratories and hospitals on different forms, then stored in the central epidemiology department. For the Khan Younis and Rafah districts, data are stored in the Khan Younis epidemiology unit to the end of the month before being transferred by hand to the central department.

There is no computerized database, and the data are stored on a spreadsheet despite

the presence of computers. Analysis of the data is limited and generally by the time data reach the central level, to be analysed and information for action generated, the time for effective action has already passed [1].

The usefulness of such data has been limited by: 1) the separate surveillance systems of different health providers, mainly the governmental, UNRWA and NGO sectors; 2) non-involvement of the private sector in the surveillance activity; 3) low percentage of respondents from different health sectors, mainly from hospitals and governmental PHC centres; 4) the lack of uniform case definitions for public health surveillance.

Simplicity

To increase the usefulness of the system, the quantity of information collected and reported must balance the needs for simplicity, increased efficiency of the system and sufficient data [1]. In Palestine, the system for communicable disease surveillance is not simple. The list of notifiable diseases is long and there are some discrepancies between the list of notifiable diseases in the UNRWA and government as used in practice. Reporting methods vary for aggregated and individual data and there is a considerable amount of form-filling and duplication of information recorded at the different levels of the system, especially for group B and group C diseases. Data analysis is not simple and does not make maximum use of the data recorded.

Acceptability

Acceptability is an indicator of the willingness to participate in the system. There is considerable variability between the different districts in the level of reporting, and no reporting at all from the private sector.

Feedback mechanisms are among the weakest points of the surveillance systems in the Eastern Mediterranean Region [1]. There is usually no way of showing peripheral staff the value of their vital contribution to the system, and hence they lose interest in surveillance activity [1]. In Gaza Strip, health professionals, especially physicians, were not reporting to the epidemiology department as they already felt overburdened with work due to excessive numbers of patients. They also feel uninterested in the system due to the lack of regular feedback.

Representativeness

There is evidence of a significant degree of underreporting of communicable diseases in Palestine [5]. In 1995, an audit over 3 months in Gaza Strip reported that less than 37% of PHC centres made any returns and only two out of seven laboratories made returns for more than 4 weeks in the 13-week period [5]. In 1998, the underreporting continued so that 13 PHC centres out of 33 (39.4%), 7 PHC laboratories out of 18 (38.9%), 7 hospitals out of 9 (77.8%), including Shifa hospital (the main hospital in Gaza Strip), and 3 hospital laboratories out of 9 (33.3%) made no returns within the study period. Reporting of infectious diseases in UNRWA PHC centres represents about 60% of their total capacity (H. Abu Musa, personal communication, 1998).

Conclusions and recommendations

Underreporting of infectious diseases continues to be one of the main problems in communicable disease surveillance, requiring urgent intervention. Thus the following recommendations are proposed.

- Unification of the reporting forms between different health providers, especially UNRWA.
- Increased involvement of NGOs, health centres and hospitals, and of private, military and police health sectors in the reporting of infectious diseases.
- Advanced training to staff of epidemiology departments on the different components and methods of surveillance, and provision of the necessary human resources (statistician, medical secretary) and other technical resources such as telephone, fax machine, photocopier and Internet access.
- Increased involvement of nursing offices in different hospitals and PHC centres in the reporting of infectious diseases.
- Regular quarterly feedback reports to different health providers and an increase in the regular meetings between epidemiology department staff and the health providers; production of surveillance newsletters or epidemiological bulletins.
- Complete separation of surveillance and clinical activities in epidemiology departments.

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