

Timeliness of Notification in Infectious Disease Cases

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Synopsis

Records of notification in cases of eight infectious diseases in the "Servei Territorial de Salut Pública" of the Province of Barcelona, Spain, between 1982 and 1986 were reviewed. Time from onset of symptoms to notification, time from notification to completion of data collection, and time from onset to completion of the case investigation were analyzed.

For the period from onset to notification, the shortest mean was registered for meningococcal infection (6.31 days) and the longest was for pulmonary tuberculosis (54.79 days). For time from notification to complete investigation, the shortest value was for pulmonary tuberculosis (12.20 days) and the longest for rickettsioses (35.79 days). Time from onset to completion of data collection was 22.87 days for meningococcal infection and 72.34 days for tuberculosis of other organs (probably because of the long period of time that elapses between the onset of the first symptoms and notification).

It would appear that both physicians and the general population must be educated so that laymen can identify early signs and symptoms of disease and physicians can realize that statutory notification of infectious diseases is strongly linked to community health care.

In many countries, epidemiologic surveillance of infectious diseases is regulated by a statutory process of notification. In the context of this process, notification sets in motion the measures whereby public health departments control and prevent the spread of disease. Consequently, the speed and timeliness with which the system is put into operation are of particular significance. We studied the timeliness of procedures carried out once notification of infectious diseases had been effected.

Materials and Methods

In Catalonia, an autonomous Community of Spain, the system of compulsory notification is based on physicians' clinical suspicion. Since 1982 there has been a list of diseases that require notification with personal information on each patient. The same procedure is applied to diseases that require urgent notification, such as meningococcal meningitis, even though notification by tele-

phone at the time of clinical diagnosis is necessary in those cases. Forms must be mailed to Public Health Services on the same day that they are filled in. When the form is received, an epidemiologic case record is compiled with clinical, epidemiologic, and laboratory data that permit health care authorities to establish any necessary control measures to prevent new cases.

The eight most common diseases requiring notification in Catalonia—brucellosis, dysentery (bacterial and amoebic), typhoid fever, viral hepatitis, meningococcal infection, rickettsioses other than epidemic typhus, pulmonary tuberculosis, and tuberculosis of other organs—were selected for the study. We reviewed the records of notification of these diseases in the "Servei Territorial de Salut Pública" of the Province of Barcelona (4.6 million inhabitants) between 1982 and 1986.

The time from onset of symptoms to notification and from notification to completion of case investigation were analyzed. For each period, the confidence intervals of the arithmetic means with a significance of 5 percent were calculated.

Results

The number of notification records that included an epidemiologic study of cases was 10,503. Their distribution according to diseases as well as the arithmetic means and upper and lower confidence limits for time from onset of symptoms to notification and time from notification to completion of case investigation are shown in tables 1 and 2. The breakdown showed 701 cases of brucellosis, 188 of dysentery, 495 typhoid fever, 2,863 hepatitis, 1,719 meningococcal infection, 596 rickettsioses, 3,527 pulmonary tuberculosis, and 414 tuberculosis of other organs.

With regard to time from onset of symptoms to notification (table 1), the shortest mean was registered for meningococcal infection (6.31 days) and the longest was for pulmonary tuberculosis (54.79 days). With regard to time from notification to completion of case investigation (table 2), the shortest mean was registered for pulmonary tuberculosis (12.20 days) and the longest was for rickettsioses (35.79 days). The extreme values for the total period from the onset of symptoms to completion of epidemiologic case records were 24.7 days for meningococcal infection and 70 days for tuberculosis of other organs (see chart).

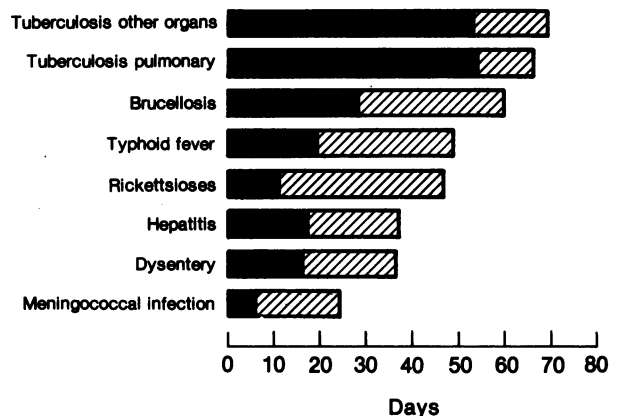
Discussion

Only a 5-year period has been reviewed because prior to 1982 in Catalonia no further information was collected on each case of infectious disease after notification. Physicians only provided weekly information on the number of cases diagnosed (1,2). The results in this study coincide with those of Clarkson and Fine (3) concerning notification delays on 15 diseases over 30 years. These authors studied only one measure of timeliness, meningitis being the infection that was most quickly notified and tuberculosis the least quickly. Although each surveillance system is unique, and it is very difficult to establish comparisons (4), these findings show that notification of infectious diseases cannot be studied as a whole but in terms of separate clinical entities.

It should be noted that, with the exception of pulmonary tuberculosis and tuberculosis of other organs, the period of investigation for all other conditions was greater than time from onset to notification. This period had the greatest impact on the total time from onset to completion of epidemiologic case record.

As other authors have stated, time from onset of

Time lapse distribution from the onset of symptoms to notification (solid bar) and from notification to completion of case investigation (shadowed bar) Catalonia, Spain, 1982-86



symptoms to notification depends primarily on the nature of the disease, for example, the insidious onset of tuberculosis as opposed to an extremely rapid evolution of meningococcal meningitis. Socio-cultural factors and accessibility to health services also determine when the patient visits the physician and whether the appropriate diagnosis is made (5-9). Because all notification forms are sent to local health services by mail, it seems that urgent notifications by telephone, as in the case of meningococcal infection, would have little influence on the results. The time from the onset of symptoms to notification is not influenced by the time spent waiting for laboratory confirmation of a diagnosis (10), since physicians have to notify authorities as soon as there is clinical suspicion of disease.

Time from notification to completion of the epidemiologic case record depends primarily on the efficacy of the statutory notification system, and it is in this direction that efforts to improve timeliness and effectiveness of notification should be made. The investigation of cases is not the only epidemiologic surveillance activity that results from statutory notification. Telephone calls and personal contacts may also give rise to health service intervention, although this does not happen often. Since no documented evidence of these calls and contacts is available, they cannot be used for assessment purposes. The onset of symptoms does not coincide exactly with the spread of the disease in the community. It is the only factor that serves as an indication of this risk, however.

The short time from notification to completion of data collection in cases of tuberculosis is proba-

Table 1. Arithmetic means and confidence intervals¹ (days) for time from onset of symptoms to notification in a study of records of notifications of infectious diseases, Catalonia, 1982-86

Disease	Mean	Confidence limits	
		Upper	Lower
Brucellosis.....	28.85	26.58	31.12
Dysentery.....	16.64	12.39	20.89
Typhoid fever.....	19.97	17.89	22.05
Hepatitis.....	17.61	16.63	18.59
Meningococcal infection.....	6.31	5.55	7.07
Rickettsioses.....	11.46	10.70	12.36
Tuberculosis:			
Pulmonary.....	54.79	53.01	56.57
Other organs.....	54.09	48.58	59.60

¹ alpha error = 0.05.

Table 2. Arithmetic means and confidence intervals¹ (days) for time from notification to completion of case investigation in a study of notifications of infectious diseases, Catalonia, 1982-86

Disease	Mean	Confidence limits	
		Upper	Lower
Brucellosis.....	31.64	28.76	34.52
Dysentery.....	20.37	17.78	22.96
Typhoid fever.....	29.63	26.40	32.86
Hepatitis.....	19.99	18.85	21.13
Meningococcal infection.....	18.42	16.64	20.02
Rickettsioses.....	35.79	32.67	38.91
Tuberculosis:			
Pulmonary.....	12.20	11.44	12.96
Other organs.....	15.91	14.13	17.69

¹ alpha error = 0.05.

bly explained by the implementation in Catalonia of a program of control and prevention of this disease. The time from onset to completion of data collection is still too long, however. This is due to the long period between the onset of the first symptoms and notification. As Häro (11) points out, this is most likely the difficulty that arises when public health services attempt to reduce the prevalence of tuberculosis in the community (12). The time lapse between the notification of disease and the implementation of epidemiologic surveillance should be reduced to a minimum to prevent the subsequent appearance of secondary and tertiary cases (13-15). Timeliness is undoubtedly one

of the main attributes of any surveillance system. The education of the general population and of physicians is necessary so people can identify early signs and symptoms of disease and physicians can recognize the link between statutory notification and community health care.

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