Report

Active case-finding of communicable diseases in the south of the Islamic Republic of Iran

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SUMMARY In the Fars province of the Islamic Republic of Iran, we established the Communicable Diseases Committee which determined 24 priority infectious diseases for active reporting. The Committee chose laboratory criteria for diagnosis of the selected diseases, trained reporters and follow-up staff and invited cooperation from heads of private and government laboratories. Cases were identified by the reporting staff and patients were interviewed by the follow-up staff, who also requested patients to complete an epidemiological questionnaire. Results were returned to the district health care centres and to the Committee for data analysis. Case-findings in 16 out of the 24 selected diseases showed an increase of up to 30 times compared to passive case-finding. This was due more to the greater efficiency of the method than to cohort epidemics.

Introduction

Surveillance is the collection, analysis, interpretation and dissemination of in-formation on selected health issues [*1*]. The surveillance of communicable diseases is an important function of health and medical services in general. In developing countries, where there are no reliable systems for case-reporting, this function is underdeveloped.

Health systems use the information from surveillance to plan, implement and evaluate health programmes and activities. An effective surveillance system has the following tasks:

- to find diseases which cause significant morbidity or mortality, and that can be controlled;
- to identify and correctly classify diseases;
- to correctly reflect the distribution of diseases over time, place and persons;
- to clearly define the diseases under surveillance;
- to set out effective methods for data collection, analysis, interpretation and feedback of information;
- to determine appropriate action plans based on the data processed in the system [*2*].

In Fars province, as in other provinces of the Islamic Republic of Iran, there are some private and government hospitals and laboratories which have proved uncooperative in reporting disease cases to health centres. In order to improve our surveillance system, we implemented active case-

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Received: 02/06/98; accepted: 19/11/98

finding based on the clinical and laboratory diagnosis of 24 relevant local communicable diseases (Table 1).

Methodology

Fars province, located in the south of the country, consists of 16 districts with a total population of about 4 million. Each district has a health centre that provides primary health care services, such as vaccinations and disease surveillance.

We established the Communicable Diseases Committee, which consisted of one epidemiologist and three subspecialists of infectious diseases. We decided to priori-

Table 1 **Diagnostic criteria of 24 communicable diseases**

Disease	Diagnostic criteria
Acute flaccid paralysis [2–4]	History and clinical finding and viral isolation
Anthrax [3,5,6]	Positive direct smear and culture
Amoebiasis [3,5,6]	Positive stool for amoebic trophozoites
Brucellosis [7,8]	Wright ≥ 1/128 and 2 morcaptoethanol test ≥ 1/128
Cutaneous leishmaniasis [3,4]	Clinical presentation and/or direct smear
Cholera [2,5]	Positive stool culture
Diphtheria [2,5]	Positive culture for *Corynebacterium diphtheria*
Gonorrhoea [2,5]	Positive direct smear of genital secretions and positive culture plus clinical finding
Kala azar [3,4]	Immunofluorescence assay ≥ 1/128 or presence of Leishman body in bowel movement
Hepatitis B [2,5]	Positive Hbs Ag plus clinical finding
Hepatitis NB [9,10]	Positive Hbs Ag plus clinical finding and increase in liver enzymes > 3 times normal
Human immunodeficiency virus [2,4,5]	Positive HIV test by ELISA and Western blot
Leprosy [11]	Clinical findings and positive pathology
Malaria [3,4,6]	Positive peripheral smear
Measles [2,5]	Positive serological test (with fourfold rise in antibody titre)
Meningitis [1,2]	Positive blood or cerebrospinal fluid
Pertussis [2,5]	Positive culture
Rabies [12]	According to history and clinical finding
Shigellosis [2,5]	Positive stool culture
Syphilis [2,5]	Positive VDRL and fluorescent treponemal antibody absorption plus clinical finding
Toxoplasmosis [13,14]	Immunofluorescence assay ≥ 1/512
Typhoid fever [3,4,6]	Positive clinical finding, positive Widal test > 1/160
Tuberculosis [2,5]	Positive acid-fast bacilli by direct sputum smear
Tetanus [2,3,5]	According to clinical findings

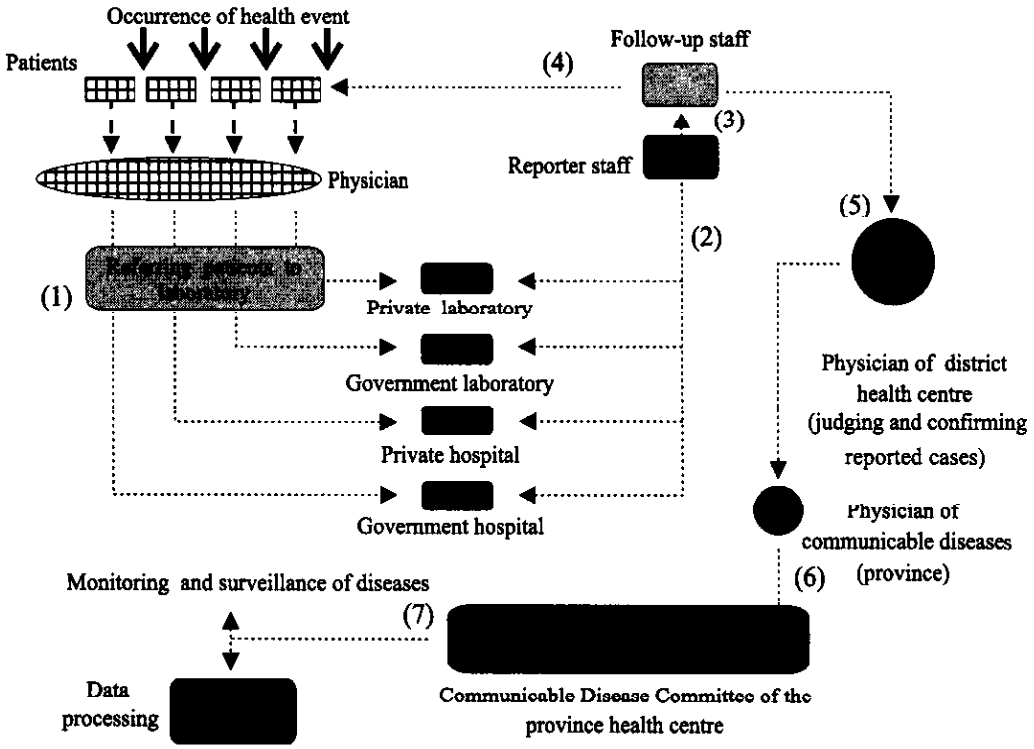

Figure 1 **Active case-finding and monitoring processes of communicable diseases in Fars Province, Islamic Republic of Iran**

tize the wide variety of communicable diseases according to their incidence rate of morbidity, mortality and vaccine preventable states, and thus a total of 24 diseases were selected. The diseases selected are listed in Table 1, together with the criteria used for the diagnosis of each disease according to acceptable laboratory and clinical findings.

The Committee trained staff as reporters and follow-up staff and retrained the physicians involved in the health system regarding the diagnosis and treatment of the selected diseases. The physicians learned not only how to handle the diseases, but also how to report them. The importance of active case-finding was pointed out to the heads of private and government laboratories and their cooperation with the Committee was sought.

If acute flaccid paralysis (AFP), tetanus, meningitis, measles, cholera or diphtheria were observed, they were to be reported by fax on a daily basis from the districts to the health headquarters of the province. The occurrence of other diseases would be mailed to headquarters every 2 weeks.

As shown in Figure 1, the active case-finding and monitoring process of communicable disease in Fars was as follows.

1. After the occurrence of a health event, patients were referred to physicians and then to laboratories and hospitals for paraclinical diagnosis.
2. The reporter staff referred to laboratories and hospitals for collection of documented laboratory data of the 24 diseases and registered the name, age, sex and address of each patient.
3. The information was passed on to the follow-up staff in the district health care system.
4. Follow-up staff held face-to-face interviews with patients at the patients' homes and collected data including history of contact with index case, travel, blood transfusion, vaccination and an evaluation of the sanitary status of the homes.
5. The data were then presented to district health centre physicians for confirmation of the reported cases.
6. Data were passed on to physicians of communicable diseases (in the province health centre) for control and analysis of the information.
7. Data from each district were then passed on to the Committee for action.

Table 2 **Comparison of the frequency of communicable diseases by active and passive case finding in 1995 and 1996**

Disease	Passive case-finding (1995)	Active case-finding (1996)	Percentage difference 1996 versus 1995
Acute flaccid paralysis	3	28	833
Anthrax	7	17	143
Amoebiasis	25	989	3856
Brucellosis	830	3180	283
Cutaneous leishmaniasis	1560	2977	91
Gonorrhoea	3	91	2933
Kala azar	12	96	700
Hepatitis B	4	301	7425
Hepatitis NB	22	776	3427
HIV infection	7	7	0
Malaria	1708	1339	–22
Meningitis	?	14	–
Shigellosis	20	232	1060
Syphilis	2	55	2650
Toxoplasmosis	7	94	1243
Tuberculosis	256	369	44
Typhoid fever	22	686	3018

Results

As shown in Table 2, with the exception of malaria, the frequency of other communicable diseases increased from 1995 to 1996: AFP by 833%, amoebiasis by 3856%, gonorrhoea by 2933%, kala azar by 700%, hepatitis B by 7425%, shigellosis by 1060%, toxoplasmosis by 1243%, tuberculosis by 44%, typhoid fever by 3018% among others. There was no significant change in the frequency of occurrence of diphtheria, measles, pertussis, tetanus, cholera, leprosy or rabies.

Discussion

By establishing the active case-finding method, we found a significant increase in the frequency of communicable diseases. New methods of case-finding have helped us to improve the monitoring and surveillance of communicable diseases and to determine our health status. Except for malaria, the frequency of all communicable diseases had increased as shown in Table 2. The cohort increase in the frequency of these diseases is the direct result of the new approach to active case-finding, and not due to epidemics.

A study was made in Belgium in order to assess the completeness and specificity of recording of meningococcal disease by routine sources of information [*15*]. The overall completeness of recording was 44% for the notification of communicable disease and 40% for the reference laboratory. When these two sources were used for surveillance, the completeness of case-finding increased to 56%. Thus, the surveillance of communicable diseases should rely on various sources of information. Laboratory data should be used in order to improve both the completeness of recording and specificity of case ascertainment.

The increase in tuberculosis cases is particularly interesting as every sputum-positive patient can spread the diseases to about 10 other people each year [*6*]. So by the detection of about 100 new sputum-positive cases, at least 1000 new infections can be prevented.

The decrease in malaria cases is probably due to the return of Afghan refugees to their country (about 85% of malaria patients in the Islamic Republic of Iran are Afghanis). In addition, distribution of anti-malaria drugs is restricted only to health centres and therefore nearly all acute cases are referred to these centres for treatment and follow-up. Because of this, even before the establishment of this active method, malaria was better detected than the other communicable diseases.

Due to the massive vaccination programme against diphtheria, measles, pertussis and tetanus, there was no change in frequency of these diseases from 1995 to 1996. Because of active case-finding, this was also the case for cholera, leprosy and rabies.

The advantages of active case-finding are:

- All the cases reported were confirmed by laboratory criteria which enhanced diagnostic precision.
- Most patients were referred to laboratories after being visited by trained physicians.
- It is easier and cheaper to rely on laboratories rather than physicians for referring because we have about one laboratory for every 20 physicians.
- The laboratory diagnosis of diseases is more precise than a clinical diagnosis.

The disadvantages are:

- Not all the patients treated by physicians were referred to laboratories. This problem becomes more serious when the disease is simple and/or epidemic.
- Because of some methodological restrictions, the laboratory findings are not precise in some cases, such as serological tests for salmonellosis.

Because of the increase in case-finding, up-to-date reporting, the low expense and low personnel demand, we believe active case-finding is the most effective method for case-finding in order to respond to outbreaks and epidemic threats in developing countries.

Acknowledgements

We wish to thank Gharechahi Mohammad Ali, Ghahremani Iraj, Yaghoot Mehrzad and other health workers of Fars province for their help in the study.

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