

SURVEILLANCE TECHNIQUES FOR DETECTING IMPORTATIONS OF SMALLPOX

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INTRODUCTION

The traditional method for preventing the importation of smallpox is the creation of check-points at the ports and customs stations along the territorial borders where vaccination certificates are inspected and where vaccination is done when required. In addition, suspected smallpox cases may be detected and quarantined and contacts may be placed under surveillance. However, in a region where members of the same tribe and sometimes members of the same "extended" family live on both sides of the territorial borders, there is constant movement across the borders along uncharted paths. Under such circumstances the traditional method of preventing the importation of diseases is ineffective, and greater reliance is placed on the improvement of surveillance throughout the country and the institution of prompt containment measures when imported smallpox is discovered.

It is a common observation that public interest in disease control measures, especially those which entail interference with people, begins to wane as the incidence of the disease falls and its public health importance diminishes. As has been stressed, surveillance is important as a factor in smallpox eradication and as a means of maintaining the achievements of eradication.

THE METHOD OF SURVEILLANCE ALONG TERRITORIAL BORDERS

The Republic of Ghana has a rectangular shape. It is bordered by Ivory Coast, Togo, Upper Volta, and the Atlantic Ocean. Since it is impossible to maintain effective watch - along all borders, it is useful to be able to shift efforts to where they are most needed. Knowledge of the epidemiological situation in the neighbouring countries serves as the basis for the selective deployment of surveillance personnel. There are three main sources of information. These are: (a) the radio reports from WHO Geneva, (b) the Weekly Epidemiological Record of WHO, and (c) direct reports from the neighbouring countries. In addition, newspapers serve as important sources of information about outbreaks of disease. For example in July 1968, a report of four deaths caused by chickenpox was observed in one of the national newspapers. The report was promptly investigated and 16 cases of smallpox were discovered. The outbreak was in one family of a Togolese farmer, his two wives and 14 children. They had all visited Togo to celebrate an annual festival and to observe religious rites when the vaccination teams vaccinated the district where they had lived in Ghana. One of the wives and three children developed smallpox and died within ten days following the return of the family to their farm in Ghana. The other wife and the 11 other children all developed smallpox but survived. The farmer who was the only member of the family who had been previously vaccinated did not develop smallpox.

It is part of the routine of health inspectors whose districts lie on the borders that they pay regular visits to the villages and towns within 10 miles of the borders to enquire from the traditional chiefs, teachers, pastors, and other community leaders about the presence of smallpox in their vicinity. In addition, mobile teams from the Medical Field Units are dispatched to scout for smallpox cases along the adjacent territory on the Ghana side whenever information is received about the occurrence of smallpox in a neighbouring territory.

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During the past 18 months no cases of smallpox have been reported in Ivory Coast. The outbreaks of smallpox in Upper Volta have been along its borders with Mali, Niger and Togo, quite remote from the border with Ghana. During this period Togo has reported numerous outbreaks of smallpox. Because Togo is a narrow strip of territory along the entire eastern side of Ghana, no part of Togo is remote from the Ghana border.

During 1968, six outbreaks of smallpox (all traced to external sources), involving 24 persons were reported in Ghana. Four outbreaks, which resulted in 22 cases and five deaths, occurred at distances in excess of 100 miles from the Ghana-Togo border; while two occurred near the border with Togo. This experience underscores the importance of increasing the sensitivity of surveillance methods throughout Ghana.

METHODS OF SURVEILLANCE EMPLOYED IN GHANA

The conditions needed for effective surveillance are a network of health units manned by trained personnel oriented to investigate and report all cases of smallpox, strategically placed laboratory diagnostic facilities, and good communications systems.

Although there exists a programme for the development of the necessary infrastructure for surveillance, this is only in the embryonic stage. At present, however, there exists a reasonable distribution of auxiliary health staff. The country is divided into nine regions and each region is divided into five health areas. Each health area is divided into four or five health post areas, according to the size and population density. The health posts are intended to make it unnecessary for anyone to travel more than seven miles for medical assistance. This means that about 220 health posts are needed. Nine of these are at present in operation.

Each health area has a health centre, and in some health areas there may be one or two hospitals in addition. Each region has a regional hospital. Three regional hospitals which are strategically placed have been designated as central hospitals. The central hospitals are intended to be developed to provide all modern medical facilities. The laboratories at the central hospitals are being developed to provide diagnostic support for both clinical and epidemiological investigations. The health laboratories are to be known as sentinel laboratories.

The network of all-weather roads in Ghana is reasonably good. In addition there are strategically placed police shortwave radio stations that can be used by the health staff.

MORTALITY REGISTRATION

Until 1968 there were 45 compulsory registration districts where it is impossible to bury a dead body without registration. These districts covered 50% of the total population. The registration areas have been further extended since 1968.

MORBIDITY REPORTING

Over a period of many years the public has learned to report suspicious exanthematous conditions. The chain of reporting is from individuals, family heads, chiefs, teachers and pastors, as well as administrative officers, to the health inspector. The health inspector is obliged to carry out his investigations and initiate control measures immediately. He reports to the medical officer of the district, who, in turn, reports simultaneously to the Regional Medical Officer of Health and to the Ministry of Health headquarters in Accra.

LABORATORY INVESTIGATIONS

Since January 1968 it has been the policy to obtain laboratory confirmation of every outbreak. For this purpose specimen collection kits have been made. The tests performed have been agar gel diffusion and haemoagglutination inhibition tests. Whenever possible, though this is infrequent, virus isolation has been attempted. A specimen is also sent to the National Communicable Disease Center, Atlanta, USA for confirmation.

DISSEMINATION OF INFORMATION

Besides the telegraphic report of an outbreak, a weekly report is necessary which must be made even when no cases are seen. Monthly reports summing up the experience of each month are also mandatory. These reports, upon confirmation, are communicated to WHO and the neighbouring countries. Information obtained about the situation in bordering countries is distributed from the Headquarters to the Regional Medical Officer of Health and through him to the peripheral health units.

DEMOGRAPHIC AND SOCIO-ECONOMIC DATA

The collection of information on socio-economic status of a case helps in tracing other cases. The tribal origin helps in determining whether the case is imported or indigenous.

SPECIAL SURVEYS

While investigating reported outbreaks, the opportunity is taken to check on the take rates of vaccinations done by the health inspector and his staff. The storage condition of the vaccine is noted and a sample of the vaccine is sent for potency tests. In addition, scar rates in the area are estimated when possible.

CONCLUSION

Knowledge of the epidemiological situation in neighbouring countries determines where surveillance efforts should be intensified near the borders to avoid re-introduction of imported smallpox. In addition, the experience in Ghana has shown that it is equally important that surveillance in other areas should be sensitive for the early detection of cases. All methods of surveillance applicable to smallpox are employed. Prompt disease control measures stop the spread of the disease.