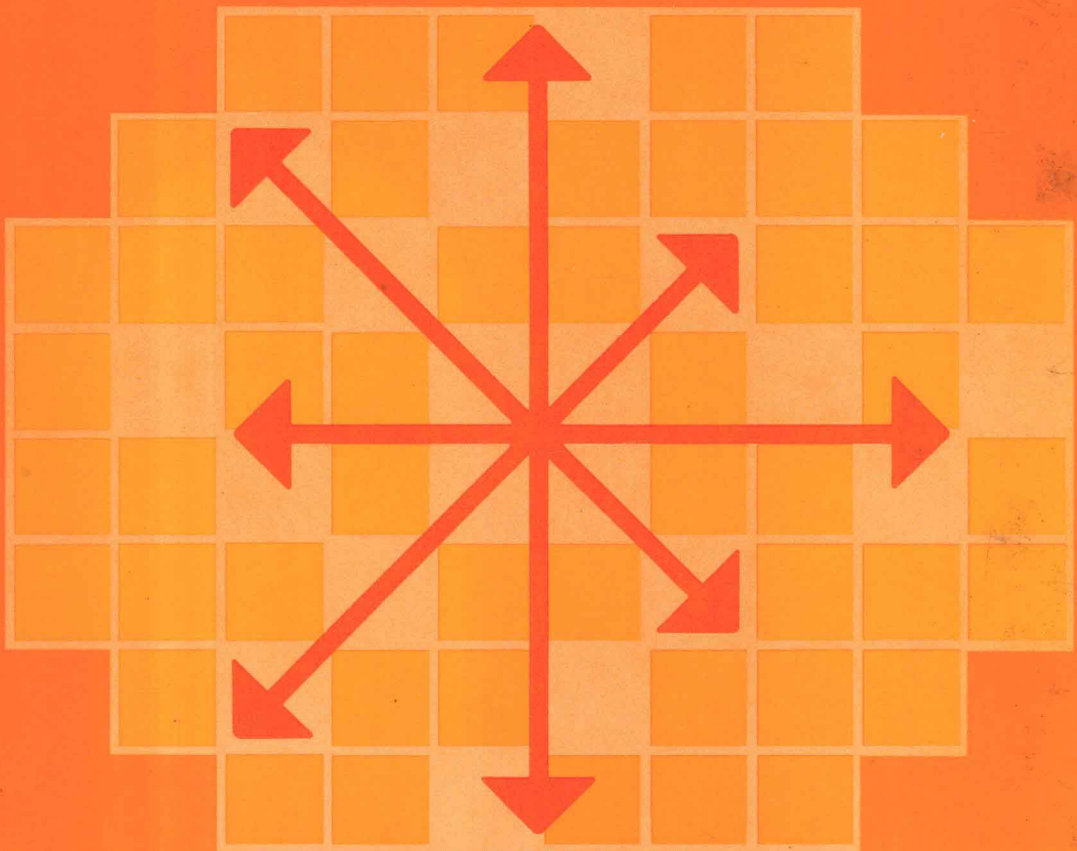


SAFETY MEASURES FOR USE IN OUTBREAKS OF COMMUNICABLE DISEASE

Prepared by Donald J. Dunsmore



WORLD HEALTH ORGANIZATION · GENEVA

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Prepared by

DONALD J. DUNSMORE

*Public Health Service,
United States Department of Health and Human Services,
Rockville, MD, USA*



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Preface

Since its foundation in 1948, the World Health Organization has provided assistance to national authorities in the investigation and control of emergencies caused by outbreaks of communicable disease. Particular interest in the methodology of conducting such operations was revived following the emergencies caused by Lassa fever and Marburg and Ebola virus diseases in the 1970s.

Between 1979 and 1983, the Division of Communicable Diseases of WHO organized a series of consultations to formulate comprehensive measures for the surveillance and control of viral haemorrhagic fevers and other “exotic” diseases. Early in these discussions, it became evident that there was no single authoritative guide on safety measures to be applied in the field in the event of a communicable disease emergency. The available information was scattered through various WHO documents and reports, national codes and guidelines, correspondence, and other reference material. Furthermore, WHO staff and consultants who had been involved in investigations of outbreaks or epidemics stressed the need for a field guide to provide basic practical safety advice for the protection of the investigator(s) first on the scene, hospital and laboratory staff, and the general public.

This manual is a compilation of recognized safety measures and procedures for use in the field and describes how locally available facilities may be adapted for emergency use. It complements the information given in *Public health action in emergencies caused by epidemics—A practical guide* prepared by Dr P. Brès and published by WHO, which describes in detail the public health action required to control disease outbreaks.

The safety measures are presented in a logical step-by-step sequence incorporating a modified decision-tree approach, which is summarized for each topic at the beginning of the appropriate chapter. Each step or action is cross-referenced to other applicable steps or actions, thus permitting prompt decision-making and appropriate action using available facilities and materials.

The World Health Organization particularly wishes to thank Mr Donald J. Dunsmore for the time and effort he has given to reviewing the vast amount of available information and assembling it into this practical guide. The Organization is also indebted to the following people who provided useful information and reviewed the early drafts of the guide: Mr J. Barnum, Industrial Training Corporation, Rockville, MD, USA; Dr P. Brès, formerly Chief, Virus Diseases, WHO, Geneva, Switzerland; Dr A.J. Clayton, Laboratory Centre for Disease Control, Ottawa, Canada; Dr J. Etienne, Institute of Tropical Medicine of the Army Health Service, Marseilles, France; and Professor L. Eyckmans, Prince Leopold Institute of Tropical Medicine, Antwerp, Belgium.

1. Actions to be taken in an emergency

First actions

INFORMING AND COORDINATING WITH LOCAL AND NATIONAL OFFICIALS

Sanitary cordon?

IMMEDIATE PATIENT ISOLATION AND CARE

1. Actions to be taken in an emergency

An *epidemic* of an infectious or parasitic disease is defined as the occurrence of a number of cases of a disease, known or suspected to be of infectious or parasitic origin, that is unusually large or unexpected for the particular place and time. An epidemic often evolves rapidly and requires a rapid response.

The characteristic elements of an emergency caused by an epidemic, or threatened epidemic, include the following, although not all need be present and judgement must be exercised in the interpretation of their importance:

- (a) the disease involved is of such severity as to lead to serious disability or death;
- (b) a large or increasing number of cases is observed or may reasonably be expected to occur;
- (c) there is a risk of introduction or spread of the disease to involve new cases or population groups;
- (d) there is a danger of international transmission;
- (e) there is a risk of social or economic disruption from the introduction, continued presence, or spread of the disease;
- (f) national authorities are unable to cope adequately with the situation because of lack or insufficiency of:
 - technical or professional personnel
 - organizational experience
 - necessary supplies or equipment (drugs, vaccines, laboratory diagnostic materials, vector control materials, etc.).

1.1 Initial diagnosis and investigation

The public health officer investigating any situation that may involve a communicable disease is faced with the problem of taking swift action to contain such disease, while avoiding causing unnecessary alarm among the local population. It is thus important to obtain an accurate diagnosis as soon as possible. Detailed information on public health action needed to control disease outbreaks is given in *Public health action in emergencies caused by epidemics—A practical guide* prepared by Dr P. Brès and published by the World Health Organization.

1.2 Informing appropriate local and national officials

At the earliest possible time the investigating officer should report his findings to the appropriate local or national authority and take other actions as directed in the national contingency plan. An announcement of an emergency should be made only after a complete assessment of the situation by appropriate public health authorities. Since such action sets in motion many organizations and activities and may alarm the public, it should not be taken unless absolutely necessary.

1.3 Sanitary cordon

In extreme situations it may be necessary to establish a sanitary cordon (or quarantine zone) in or around a community. This will involve the coordinated efforts of several public service groups to inform the people affected, control water and food supplies, regulate the movement of people into and out of the community, and establish medical services. The best method for achieving such coordination is to develop a contingency plan before the emergency occurs. This will entail obtaining the proper equipment and supplies and keeping them in good working order. In addition, the people who would be required to respond to any emergency must be assembled and given appropriate training.

1.4 Steps for immediate patient isolation and care

The following is a list of the basic steps that need to be taken for the immediate control and investigation of the emergency, although not all the steps will apply to every situation. More detailed descriptions of the various activities will be found in later sections. The steps are shown diagrammatically in Fig. 1, on the next page.

1. The patient(s) should be isolated immediately and appropriate medical care established. The degree of isolation will depend on the diagnosis; more precautions are required for virulent communicable diseases than for less dangerous diseases. At the same time, provision should be made for the protection of medical attendants.

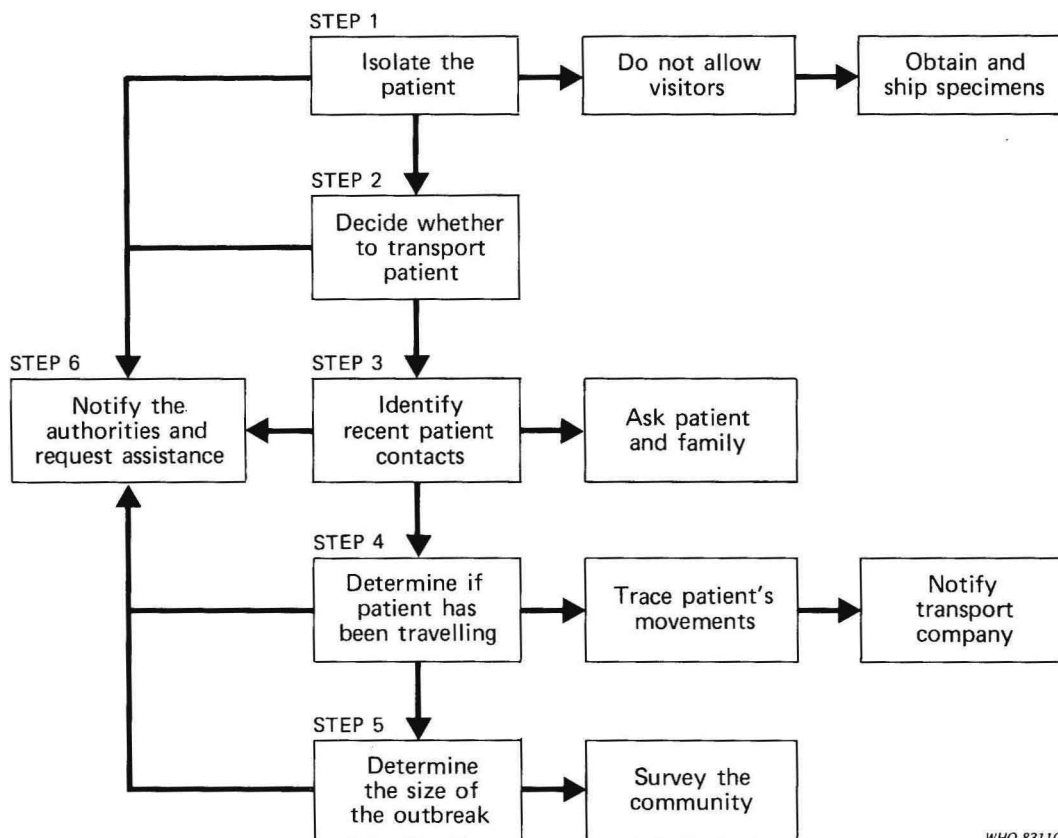
Until a medical routine is established for the patient and adequate protective measures can be taken, the patient should not be allowed visitors. When visitors are allowed, a record of their visits should be kept.

Specimens for laboratory analysis should be obtained from the patient and shipped to appropriate laboratories.

2. The necessity and advisability of transporting the patient should be considered and discussed with the appropriate authorities. It may be inadvisable to transport the patient (see "Transportation of a patient", p.32).

3. The patient's relatives and other people who have had recent contact with the patient should be located and kept isolated until the nature of the disease and its mode of transmission are known and until they have been checked for symptoms.

Fig. 1. Steps for immediate patient isolation and care



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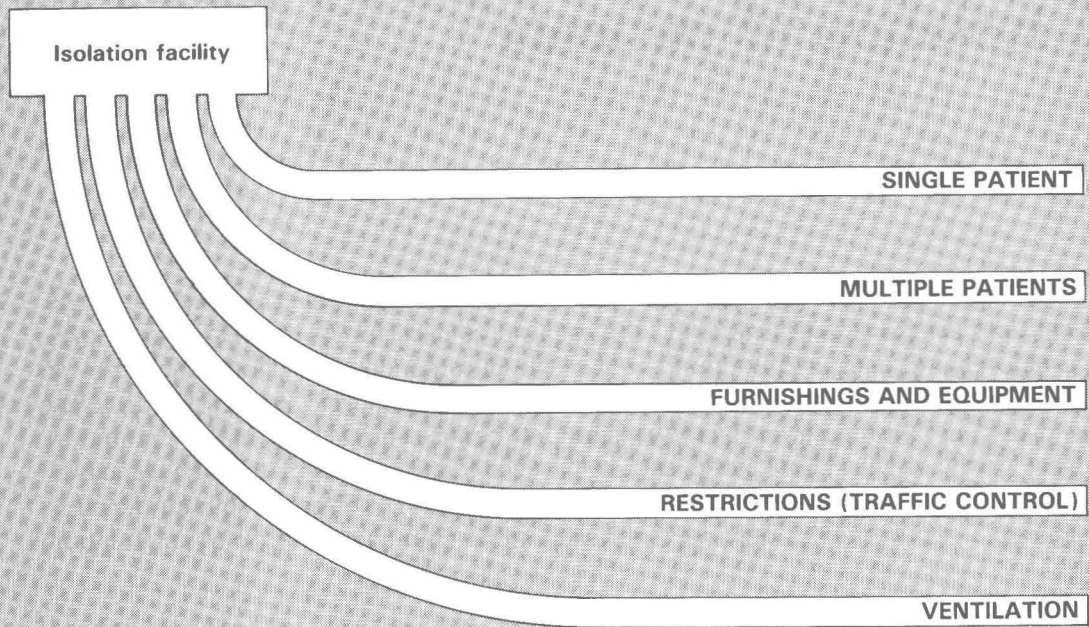
4. If the patient is on a journey or has recently travelled, efforts should be made to retrace his or her steps and obtain objects that may be contaminated, so that they can be cleaned or destroyed.

5. Local health authorities (or, if necessary, people designated by the medical officer) should inquire throughout the community (starting near the patient's home and working outward in circles) whether anyone has symptoms similar to those of the patient. Anyone reporting such symptoms should be seen by a medical officer as soon as possible. Each person involved in this inquiry should keep a record of the location of the homes visited, the names of the occupants, whether they report symptoms, and the time the record is made.

If the patient is conscious, he or she should be questioned about recent movements and any data pertinent to the disease transmission should be obtained and written down. These data will aid health authorities in finding the source of the infection. This should be done as soon as possible because the patient may not be able to answer questions if the disease becomes severe.

6. Communications with the appropriate authorities should have been established while all the above steps were being taken. It is important, however, to emphasize that information obtained from the patient (step 3) and others (step 4) about people who may have been in contact with the patient and left the immediate vicinity should be relayed to the authorities immediately.

2. Isolation of patients



2. Isolation of patients

This chapter illustrates and describes the facilities and equipment needed for single and multiple patient isolation. Ideally, the room to be used for isolation should be prepared beforehand, and anything that is not essential to patient care should be removed before the patient is brought to the room. It is especially important to remove or cover rugs. If this initial preparation is not possible, all non-essential items may be stored in a corner of the room. These items should be decontaminated after the patient leaves the room (see “Procedure for terminal cleaning”, p.30). If a special isolation room is not available, the principles described here should be applied to improvise an isolation facility.

2.1 Room for isolation of a single patient

(a) *Ideal arrangement*

For strict physical isolation, the patient should be in a single bedroom with adjoining toilet, accessible only from the bedroom. The room should be separated from the other rooms in the building by an anteroom (see Fig. 2).

Fig. 2. Ideal arrangement for isolation of patient

