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Epidemiologic Surveillance after Natural Disaster – A Study Guide

To be used in conjunction with
Pan American Health Organization
Scientific Publication No. 420

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This Study Guide is one in a series of five prepared by the University of Wisconsin–Extension, Department of Engineering and Applied Science, Disaster Management Center with financial support from the Pan American Health Organization (PAHO).

This self–study series is designed to use scientific publications of the Pan American Health Organization as texts for the study of health–related issues in disaster management. Each module of the series includes a PAHO text, a study guide, pretest, self–assessment tests and a final examination.

This Study Guide was prepared for the Disaster Management Center by Josefa Ippolito–Shepherd, Richard Hansen and Don Schramm

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Five self–study courses, based on Pan American Health Organization scientific publications, are now available. They are designed to assist in the development of disaster management plans or the improvement of existing plans. These publications and their companion study courses are entitled:

**Scientific Publication No. 407**
*Emergency Health Management after Natural Disaster*

**Scientific Publication No. 419**
*Emergency Vector Control after Natural Disaster*

**Scientific Publication No. 420**
*Epidemiologic Surveillance after Natural Disaster*

**Scientific Publication No. 430**
*Environmental Health Management after Natural Disaster*

**Scientific Publication No. 443**
*Health Services Organization in the Event of Disaster*
Foreword

Emergency Management after a Natural Disaster

Organization of a National Emergency Committee

* NGO = Nongovernmental organizations (also called voluntary agencies)

Coordination of Health Relief Activities

In the event of a natural disaster, a nation, region, community or individual will return to normal more quickly if there has been advance planning on the use of available resources.

A plan to mobilize a country's resources for disaster management is a complex undertaking, as illustrated above.
The health sector must cooperate with other groups involved in the overall plan. In addition, they must work within the framework and priorities established by those in higher authority. Within the overall plan is a section dealing specifically with health and subplans for various units of the health sector. (See illustration at right.)

Acknowledgements

The Disaster Management Center at the University of Wisconsin–Extension thanks the Pan American Health Organization for early support of course development. In particular, Dr. Claude de Ville de Goyet and Ellen Wasserman deserve special recognition for their understanding of this innovative educational process. In addition, the thoughtful review by Dr. Karl Western was of great help in the preparation of this guide. At the University of Wisconsin–Extension, Linda Hook, Darrell Petska, Susan Kummer, and Lolette Guthrie must be thanked for their efforts in editing, design and production. The course development process is never over, and each of these people understands that very well.

Introduction

How to Get Started

This self-study course will help health personnel meet the needs of people experiencing a sudden natural disaster or other disaster resulting in mass casualties. Designed primarily for health care professionals, paraprofessionals, and those in training, this course may also be of value to governmental personnel and representatives of private voluntary agencies.

The course deals with disasters caused by destructive storms, earthquakes, volcanic eruptions and sea surges. Specifically, it covers the effects of such disasters on epidemics of communicable disease.

The course is based on the scientific publication, *Epidemiologic Surveillance after Natural Disaster*, published by the Pan American Health Organization.

The procedure of self-study is:

Complete and score the Pretest. Do not be disappointed if you have a low score. If you have a high score, you probably do not need this course.

Read the Outline of Course Content to get a general idea of what is covered in the course.

Read the Learning Objectives to get a general idea of what you are expected to learn from the course.

Turn to Lesson 1: Introduction

• Review the Study Guide section for a brief description of the lesson and any special suggestions on how to study.

• Again read the Learning Objectives.

• Carry out the Learning Activities listed.

• Complete the Self-Assessment Test at the end of the lesson and score it using the answer key provided. If you have not answered most of the questions correctly, restudy the lesson.

If you score well on the Self-Assessment Test, proceed to Lesson 2.

Continue to study each lesson and complete the Self-Assessment Test until you have finished the course of study.

When you have completed all the Self-Assessment Tests to your satisfaction, you should request the Final Exam Package. This will include the Final Examination and a Disaster Development Problem.
Pretest

Multiple Choice

Circle the correct answer:

1. Surveillance of communicable diseases following a disaster is complicated by:
   a. persistence of many serious communicable diseases
   b. lack of baseline data
   c. lack of writing materials
   d. all of the above
   e. a and b

2. Appropriate assessment of rumors is possible through:
   a. early epidemiologic involvement and prompt field investigation
   b. education of concerned parties about appropriate ways to interpret and respond to rumors
   c. weekly reports
   d. a and c
   e. a and b

3. An infectious disease agent can be brought into a disaster area by:
   a. a relief worker
   b. transport vehicle
   c. supplies
   d. all of the above
   e. a and c

4. For visual appreciation of disease trends, it is most helpful to use:
   a. maps
   b. graphs
   c. columns of numbers
   d. figures
   e. a and b

5. Efforts to provide feedback to the field from the central office may be frustrated by limitations of:
   a. diagnostic resources
   b. epidemiologic human resources
   c. communications and transport
   d. all of the above
   e. b and c

6. Mass administration of antibiotics is not suitable because:
   a. antibiotics are not effective against viral diseases (i.e. influenza)
   b. no single antibiotic provides adequate coverage against all potential bacterial or rickettsial diseases
   c. antibiotics have to be taken indefinitely to prevent infection for a susceptible organism
   d. they can induce allergic reactions and toxic effects
   e. all of the above

7. Diseases potentially introduced into areas affected by disaster relief workers are:
   a. new strains of influenza
   b. diseases borne by insect vectors
   c. leukemia
   d. all of the above
   e. a and b
8. Emergency water supply operations should ensure:
   a. amount of daily water consumption needed
   b. water disinfection, protection, storage, and quality
   c. protection of wells
   d. all of the above
   e. b and c

True/False

Indicate T or F:

   9. Following a disaster it is often best to discontinue routine public health services and use the people and money for emergency public health programs directed to specific problems.
   T/F?

   10. After a disaster, the surveillance of all possible diseases is usually essential.
   T/F?

   11. Standardized case definitions and/or symptom complexes need to be incorporated in predisaster training.
   T/F?

   12. Epidemics can usually be avoided after a disaster because people congregate for food, safety and medical attention and consequently can be organized to avoid risks.
   T/F?

   13. Factors which contribute to the risk of communicable disease after a manmade disaster are very different from those after a natural disaster.
   T/F?

   14. Regular telephone or mail surveys of a sample of physicians can yield a good appreciation of actual levels of diseases in the population.
   T/F?

   15. Systematic confirmation of all suspected cases of the diseases subject to international notification and/or those of selected emphasis in surveillance is a high priority during and after disasters.
   T/F?

   16. If children in an area affected by a disaster have not been vaccinated previously, an emergency immunization program should be developed.
   T/F?

   17. Relief administrators usually give high priority to environmental health measures that prevent communicable diseases.
   T/F?

   18. Following a disaster, most epidemics are detected because medical care improves.
   T/F?

   19. International relief organizations – which provide personnel and supplies following a disaster usually view epidemiologic surveillance and control as a national responsibility.
   T/F?

   20. Most developing countries have infection control problems in their hospitals.
   T/F?

   21. After a disaster it is necessary for relief authorities to set up a separate postdisaster surveillance/assessment system.
   T/F?

   22. The most prevalent diseases in populations stricken by disaster may be controlled by mass immunization.
   T/F?

   23. Certain areas, such as permanent encampments of displaced persons, may require indefinite special surveillance.
   T/F?

   24. Serious outbreaks of communicable disease very rarely occur after natural disasters unless people are placed in camps.
   T/F?

   25. Incoming surveillance notifications should be carefully filed so they can be tabulated at the end of the reporting period.
   T/F?

Answer Key
Outline of content

Lesson 1 – Risk Factors for Communicable Diseases after Disasters

Epidemiologic Factors that Determine the Potential of Communicable Disease Transmission

The Relative Risk of Communicable Disease after Natural versus Manmade Disasters

Postdisaster Experience with Communicable Disease

Lesson 2 – Postdisaster Potential of Communicable Disease Epidemics

Exposure of Susceptibles to Endemic Communicable Disease

Increases in Levels of Endemic Communicable Disease in Local Populations

Special Problems with Communicable Disease in Encamped Populations

Communicable Diseases after Disasters

Lesson 3 – Setting Up Systems for the Surveillance of Communicable and Selected Noncommunicable Diseases

Surveillance of Diseases between Disasters under Normal Conditions

Surveillance Sources Following Disaster
Diseases to Include in Surveillance

The Collection, Interpretation and Utilization of Data

Providing Feedback to the Field from the Central Level

Lesson 4 – Operational Aspects of Disease Surveillance after Disaster

Field Investigation of Rumors and Reports of Communicable Disease

Gaining Access to Laboratories to Obtain Definitive Diagnosis and Support for Epidemiologic Investigations

Presenting Epidemiologic Information to Decision Makers Surveillance during and after the Recovery Phase

Lesson 5 – The Control of Communicable Disease after Disaster

Environmental Health Management Immunization Chemotherapy Quarantine and Isolation

Course objectives

Lesson 1 – Risk Factors for Communicable Diseases after Disasters

Identify risk factors for communicable diseases after natural and manmade disasters in both developed and developing countries.

Gain an overall understanding of postdisaster experience with communicable diseases.

Lesson 2 – Postdisaster Potential of Communicable Disease Epidemics

Recognize the potential of epidemic outbreaks of communicable diseases after disaster. Recognize the different ways in which susceptible individuals may be exposed to endemic diseases. Know the risks involved in encamped populations. Know the sanitary requirements for encamped populations.

Lesson 3 – Setting Up Systems for the Surveillance of Communicable and Selected Noncommunicable Diseases

Recognize the appropriate organization of surveillance systems. Identify diseases to include in a surveillance system. Recognize the appropriate method for the collection, interpretation and utilization of data. Recognize the importance of feedback to field workers.

Lesson 4 – Operational Aspects of Disease Surveillance after Disaster
Become aware of the need to investigate rumors and reports of communicable disease outbreaks.
Recognize the importance of using laboratories in disaster situations.
Understand the importance of presenting epidemiologic information to decision makers.
Recognize the importance of surveillance during and after the recovery phase.

Lesson 5 − The Control of Communicable Disease after Disaster

Become knowledgeable of issues in the management of environmental health.
Identify factors to be considered when carrying out immunizations during emergencies.
Recognize issues to be considered in chemotherapy during emergencies.
Become familiar with issues involved in quarantine and isolation.

Lesson 1 − Risk factors for communicable diseases after disasters

Study Guide

This lesson discusses epidemiologic factors that may determine the potential transmission of communicable diseases after natural and manmade disasters. It also provides an account of postdisaster experience with communicable diseases.

Learning Objectives

Identify risk factors for communicable diseases after natural and manmade disasters in both developed and developing countries.
Gain an overall understanding of postdisaster experience with communicable diseases.

Learning Activities

Read pages 3−12 in the manual.
Study, but do not memorize, Table 1 in the manual.

Evaluation

Complete the Self−Assessment Test.

Notes

Lesson 1 − Self Assessment Test

Multiple Choice

Circle the correct answer:

1. Increased population density is a critical factor in the transmission of diseases spread by:
   a. water
   b. respiratory route
   c. food
   d. person−to−person contact
   e. b and d

True/False

Indicate T or F:

2. Improved vaccination programs after disasters will prevent the occurrence of vaccine−preventable diseases.
3. In most of Latin America and the Caribbean, the classical diseases associated with disasters have declined or disappeared.

4. In a village with no electric power and where there are promiscuous defecation habits and contaminated sources of water in normal times, an increased risk from communicable diseases is likely after a disaster.

5. The lack of baseline surveillance data between disasters in developing countries makes no difference in confirming increases of certain diseases.

6. The risk of a spread of communicable diseases after a disaster is about equal in developed and developing countries.

7. Ecological changes due to a disaster may in some cases reduce the risk of the spread of communicable disease.

8. Laboratory diagnostic facilities for detecting communicable diseases after disasters are not essential since the clinician or epidemiologist can easily diagnose most communicable diseases.

**Answer Key**

1. e  
2. F  
3. T  
4. F  
5. F  
6. F  
7. F  
8. F

**Lesson 2 – Postdisaster potential of communicable disease epidemics**

**Study Guide**

This lesson discusses the potential of epidemic outbreaks of communicable disease after disaster. It defines three ways in which susceptible persons may be exposed to endemic disease, which may cause subsequent epidemics or increased levels of endemic communicable disease. It also discusses special problems that may be encountered in encamped populations and measures that may prevent communicable diseases. Also, it summarizes the epidemic potential of selected communicable diseases following disasters in Latin America and the Caribbean.

**Learning Objectives**

Recognize the potential of epidemic outbreaks of communicable diseases after disaster.  
Recognize the different ways in which susceptible individuals may be exposed to endemic diseases.  
Know the risks involved in encamped populations.  
Know the sanitary requirements for encamped populations.

**Learning Activities**

Read pages 13–17 in the manual.  
Read, but do not memorize, Table 2 in the manual.  
Read, but do not memorize, Annex 4 in the manual.

**Evaluation**

Complete the Self–Assessment Test.

**Notes**
Lesson 2 – Self-Assessment Test

Multiple Choice

Circle the correct answer:

1. Sanitation requirements during disaster relief operations require that the tent camp sites be:
   a. on a slope of land with a nature of soil that favors easy drainage
   b. protected from adverse weather conditions
   c. away from mosquito breeding sites, refuse dumps, and commercial and industrial zones
   d. all of the above
   e. a and c

2. Which of the following diseases does not have a high epidemic potential following a disaster in Latin America or the Caribbean:
   a. diarrhea
   b. viral hepatitis A
   c. viral hepatitis B
   d. influenza
   e. typhoid fever

True/False

Indicate T or F:

____ 3. In developing countries, epidemics are common following natural disasters.

____ 4. In general, rural populations migrating to cities are more susceptible to communicable diseases than urban populations migrating to rural areas.

____ 5. In an encampment, if an epidemic can be avoided for the first two weeks following a disaster, the risk becomes much less.

____ 6. Foreign voluntary relief teams are seldom at risk from communicable diseases since their immunization levels are high and they take appropriate precautions.

____ 7. If a disease has never been reported in a disaster area, an epidemiologist can assume there is no need for surveillance related to that disease.

____ 8. Reports of communicable diseases should be expected to increase during medical relief periods following a disaster whether there is an actual increase or not.

Answer Key

1. d 5. F
2. e 6. F
3. F 7. F
4. T 8. T

Lesson 3 – Setting up systems for the surveillance of communicable and selected noncommunicable diseases

Study Guide

This lesson presents the appropriate organization of surveillance systems. It discusses the surveillance of diseases in normal times, between disasters; reporting sources following disaster; diseases to include in the surveillance systems; the collection, interpretation and utilization of data; and central level feedback to field
offices.

**Learning Objectives**

Recognize the appropriate organization of surveillance systems.
Identify diseases to include in a surveillance system.
Recognize the appropriate method for the collection, interpretation and utilization of data.
Recognize the importance of feedback to field workers.

**Learning Activities**

Read pages 23−39 in the manual.
Study, but do not memorize Figures 1, 2, 3, 4, and 5 in the manual.
Study, but do not memorize Annexes 1, 2, and 3 in the manual.

**Evaluation**

Complete the Self−Assessment Test.

**Notes**

**Lesson 3 – Self Assessment Test**

**Multiple Choice**

_Circle the correct answer:_

1. The primary responsibility to collate and interpret weekly totals from surveillance reports belongs to:

   a. the epidemiologist  
   b. the family physician  
   c. reporting units  
   d. relief workers  
   e. none of the above

2. When communications and laboratory services are good, the communicable disease control officer learns of urgent problems through:

   a. weekly report forms  
   b. telephone  
   c. laboratory  
   d. a and b  
   e. b and c

3. Under less urgent conditions or in long−term relief efforts, the reporting week should end on:

   a. a weekend  
   b. Sunday  
   c. Friday  
   d. Monday  
   e. none of the above

4. Continued reporting of negative findings permits:

   a. continued assessment of the number of reporting units  
   b. gathering information on the absence of a disease  
   c. seeing how well forms are completed  
   d. a and c  
   e. a and b

**True/False**
Indicate T or F:

5. Before international relief workers select communicable diseases for surveillance and clinical criteria for case reporting, they should consult a national epidemiologist and the health relief coordinator of the affected country.

6. Diagnostic criteria in laboratory work after disaster needs to be flexible.

7. Indirect measures (i.e., school and industrial absenteeism) may be useful in the surveillance of certain diseases.

8. Health providers who report for duty after disasters do not need to be informed about diagnostic criteria to be used.

9. The guiding principle of reporting is to keep the number of diseases under surveillance and tabulation to an absolute minimum.

10. The deadline for receipt of notifications after a disaster should be firm and immutable.

11. Feedback to the field from the central office may be accomplished by providing weekly summaries.

12. Very exotic and fatal, or uncommon diseases are not reported frequently to health authorities, while common communicable diseases are reported.

13. Disease surveillance is essentially concerned with the gathering of information that is necessary for rational planning, operation and evaluation of activities.

Answer Key

1. c 8. F
2. e 9. T
3. c 10. T
4. e 11. T
5. T 12. F
6. T 13. T
7. T

Lesson 4 − Operational aspects of disease surveillance after disaster

Study Guide

This lesson discusses four major steps in communicable disease surveillance after disaster: (1) carrying out field investigation of rumors and reports of outbreaks of disease; (2) gaining access to laboratories to obtain definitive diagnoses and support for epidemiologic investigations; (3) presenting epidemiologic information to decision makers; and (4) guaranteeing surveillance during and after the recovery phase.

Learning Objectives

Become aware of the need to investigate rumors and reports of communicable disease outbreaks. Recognize the importance of using laboratories in disaster situations. Understand the importance of presenting epidemiologic information to decision makers. Recognize the importance of surveillance during and after the recovery phase.

Learning Activities

Evaluation

Complete the Self-Assessment Test.

Notes

Lesson 4 – Self-Assessment Test

Multiple Choice

Circle the correct answer:

1. The likelihood of releasing mistaken or exaggerated information to the media will be diminished if:
   a. seasoned health workers lead relief teams
   b. there are briefings about the policy of dealing with the media
   c. there is an open relationship between the media and the relief coordinator
   d. all of the above
   e. b and c

2. Rumors may be spread by:
   a. relief headquarters staff
   b. radio and other media
   c. field relief workers
   d. all of the above
   e. b and c

True/False

Indicate T or F:

___3. Epidemiologic surveillance activities related to disasters should be phased out as soon as possible following a disaster and normal control efforts resumed.

___4. The national relief coordinator usually has full authority to institute epidemiologic control measures when they are required.

___5. Reporters often assume that information provided by a doctor or nurse on the scene is more accurate and reliable than that in releases from official sources.

___6. When the epidemiologist investigating a rumor encounters patients with symptoms compatible with the disease in question, it is usually not necessary to collect specimens for diagnosis.

___7. If the central epidemiologist is not satisfied with the field staff’s ability to investigate a rumor, one or more epidemiologists should be sent to the field.

___8. The investigation of rumors requires specialized skills most epidemiologists do not have.

___9. Mistaken diagnosis of a communicable disease may be given because of lack of experience of the medical staff.

___10. In reporting epidemiologic information to higher authorities the epidemiologist should present the preferred solution in nontechnical terms, since the decision makers do not have the background knowledge to choose from a number of alternatives.

___11. Political issues and the nature of public outcry, rasher then public health priorities, often have determined the perceived severity of a rumor or report.

Answer Key
Lesson 5 – The control of communicable disease after disaster

Study Guide

This lesson discusses four major areas related to the control of communicable disease after disaster: environmental health management, immunization, chemotherapy, and quarantine and isolation.

Learning Objectives

Become familiar with key concepts in the management of environmental health.

Identify factors to be considered when carrying out immunizations during emergencies.

Recognize pros and cons to be considered in chemotherapy during emergencies. Become familiar with issues involved in quarantine and isolation.

Learning Activities

Read pages 53–60 in the manual.

Study, but do not memorize, Annex 5 in the manual.

Become familiar with publications No. 27 and No. 58 listed under References in the manual.

Evaluation

Complete the Self-Assessment Test.

Notes

Lesson 5 – Self-Assessment Test

Multiple Choice

Circle the correct answer:

1. After a disaster, vaccination may be considered for:
   a. the elderly
   b. patients with chronic and debilitating diseases
   c. essential personnel
   d. children
   e. all of the above

True/False

Indicate T or F:

2. After a disaster, infection control problems in hospitals usually become more severe.

3. Proper burial of human corpses and animal carcasses is a most important measure in preventing epidemics of communicable diseases.
4. Whether or not to provide chemosuppressive drugs against malaria to a population affected by disaster is a complex decision that depends on local conditions and circumstances.

5. Environmental interventions need to take into consideration the limitations in existing techniques and/or their misapplication.

6. Mass immunization against influenza is a necessary measure to be carried out after a disaster.

7. Malaria chemosuppression is usually practiced on populations living in areas with high levels of the disease.

8. The promiscuous use of antibiotics can lead to the emergence of drug-resistant strains of bacteria.

9. Mass administration of anti-infective drugs in a disaster-affected population is essential.

10. Measures of communicable disease control which are effective in normal times quite often are not effective following a disaster.

Answer Key

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Health for all by the year 2000

In 1977, the World Health Assembly decided that the main social target of the governments and of WHO should be the attainment by all people of the world by the year 2000 of a level of health that would permit them to lead a socially and economically productive life, that is, the goal popularly known as "health for all by the year 2000."

In 1978 the International Conference on Primary Health Care (Alma-Ata, USSR) declared that, as a central function of the national health system and an integral part of economic and social development, primary health care was the key to achieving that goal. Subsequently, the governments committed themselves – at the global level at the World Health Assembly, and at the regional level at meetings of the PAHO Governing Bodies – to implement the resolutions adopted for attaining health for all. In the Americas the high point of these mandates was reached on 28 September 1981 when the Directing Council of PAHO approved the Plan of Action for implementing the regional strategies for health for all by the year 2000. These strategies had been approved by the Directing Council in 1980 (Resolution XX) and today constitute the basis of PAHO's policy and programming, and represent in addition the contribution of the Region of the Americas to the global strategies of WHO.

The Plan of Action approved by the Directing Council contains the minimum goals and regional objectives, as well as the actions governments of the Americas and the Organization must take in order to attain health for all. The Plan, continental in nature, is essentially dynamic and is addressed not only to current problems but also to those likely to arise from the application of the strategies and the fulfillment of regional goals and objectives. It also defines priority areas that will serve as a basis, in developing the program and the necessary infrastructure, for national and international action.

The exchange and dissemination of information constitutes one of the priority areas of the Plan of Action. PAHO’s publication program – including periodicals, scientific publications, and official documents – is designed as a means of promoting the ideas contained in the Plan by disseminating data on policies, strategies, international cooperation programs, and progress achieved in collaboration with countries of the Americas in the process of attaining health for all by the year 2000.
Final exam package – A

To be used in conjunction with
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Scientific Publication No. 420

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Final examination

Multiple Choice

Circle the correct answer:

1. Probably the greatest risk leading to an epidemic after a natural disaster is:
   a. poor sanitation
   b. new diseases brought in by relief workers
   c. diversion of scarce resources from normal public health activities
   d. movement of large numbers of people from rural to urban areas
   e. movement of large numbers of people from urban to rural areas

2. Weekly reporting from all units is best carried out by:
   a. messenger
   b. telephone, telegraph or shortwave radio
   c. mail
   d. word of mouth
   e. none of the above

3. The most efficient way of handling rumors of any origin during and after disasters Is by:
   a. explaining the situation to the media
   b. visiting the area for an inspection
   c. providing factual surveillance data
   d. all of the above
   e. b and c

4. Interruption of basic public health services:
   a. may increase the probability of disease transmission after disaster in a developing country
   b. is often overlooked and may increase disease transmission
   c. may be the cause of an outbreak of communicable disease months after the disaster
   d. all of the above
   e. b and c

5. Examples of communicable diseases which may cause primary disasters in developing countries are:
a. measles
b. poliomyelitis
c. malaria
d. all of the above
e. a and c

True/False

Indicate T or F:

6. In most countries epidemiology units have the authority and resources to carry out necessary control measures.

7. Improvised emergency vaccination of the general population against typhoid fever, tetanus, and cholera are necessary control measures following disasters.

8. New diseases introduced into an area following a disaster have been historically a much bigger problem than diseases which occurred in the area before the disaster.

9. With the exception of epidemics or unusual cases, field reports in long-term refugee camps need only be done once per week.

10. There is no need to use standardized case definitions or symptom complexes during the relief effort, since all cases with generally similar descriptions are combined in the reports.

11. Previous exposure and the development of immunity to disease frequently mean that rural populations without sanitary facilities are at a lower risk of acquiring communicable diseases than are urban dwellers and relief workers.

12. A form of valuable feedback to field workers is a weekly report accompanied by background information.

13. The national authority responsible for coordinating health activities after a disaster should be part of the Health Ministry or other principal health provider during normal times.

14. An outbreak of communicable disease due to a disaster will be evident within two to three months.

15. Infection rates in Latin American and Caribbean hospitals normally run as high as 20 percent.

16. In a developing country, the interruption of basic public health services after disaster is often the result of the diversion of staff and financial resources to the relief efforts beyond the critical period.

17. It is unlikely that a disease will be introduced into a disaster area through relief food supplies since they are usually tinned or processed.

18. Once a rapid survey of a population establishes the level of communicable disease after a disaster, it is quite easy to decide on control measures.

19. The diseases included in the national surveillance program of each country do not vary considerably.

20. Experienced physicians from affected areas may fail to consider introduced diseases in their differential diagnosis.

21. Epidemics can best be avoided by bringing people together in groups since discipline can be maintained and major risks avoided.

Disaster Development Problem

After reading about the disaster described below, you are to make decisions and answer questions relating to this disaster. For each question, record your responses on the answer sheet provided (see page 5) before going on to the next question.
(A) Flood

Background

A major flood has occurred in a Latin American country, where over 2,000 people died as a result of the disaster.

The flood, which occurred overnight, completely covered several towns. As a result of this, the affected area of approximately 100,000 people (approximately 40 towns) became isolated due to the total destruction of roads and other means of communication in the area. Sanitation and local health facilities have been damaged and mosquito control programs have been interrupted.

Problem (A−1)

The potential risk of communicable diseases after a disaster such as this is influenced by six types of adverse change.

List three of them.

Problem (A−2)

There are three ways in which susceptible populations may be exposed to communicable disease.

List two of them.

Problem (A−3)

A good predisaster surveillance system existed in the more densely populated northern section of the disaster area, but there is little predisaster epidemiologic data available about the rural, less densely populated southern section and no effective surveillance system.

As communications are slowly being reestablished, which of the following are appropriate?

Answer "A " for appropriate or "I" for inappropriate for each statement below:

_____A new surveillance system should be established for the entire area, designed for this specific disaster.

_____The existing surveillance system should be used for the northern area, and a traditional surveillance system should be implemented in the southern area during the immediate postdisaster period.

_____Only official data sources should be used since unofficial sources, such as newspapers, may exaggerate problems or report rumors.

_____Ad hoc relief teams in the disaster area are good sources of information, particularly in the southern area.

_____It is of little value to receive reports of symptoms since surveillance must be in terms of specific diseases.

Problem (A−4)

Flood waters have receded in the northern section and people have returned to their homes. However, low−lying parts of the southern area are still flooded and a decision has been made to evacuate some areas and establish tent camps.

The national epidemiologist is involved in electing the camp sites. He has five major criteria.

List three of them.

Problem (A−5)

Most problems caused by the flood are being brought under control and most of the health systems and services are returning to their predisaster levels. More resources and equipment, used for urgent problems
during the immediate postdisaster period, are becoming available to the epidemiologic surveillance teams and they are under great stress carrying out surveillance activities.

A rumor arises that an outbreak of influenza in a remote part of the southern region is spreading into an epidemic. Which of the following actions are appropriate?

Answer "A" for appropriate or "I" for inappropriate for each statement below:

___ Have a respected national authority deny the rumor until more information is available.
___ Try to contact health units in the area by radio to obtain more information.
___ Take an epidemiologist away from other duties and send him to the area to investigate.
___ Dispatch supplies of gamma globulin and influenza vaccine to the area for a mass immunization program, in case the rumor proves to be true.
___ Cases of influenza in the area are confirmed by physicians in the area, so it is not necessary to use busy laboratory personnel and equipment to confirm the diagnoses.

Final Examination

Answer Sheet

(A–1) List three types of adverse change after a disaster that influence potential risk of communicable diseases.

1. ____________________
2. ____________________
3. ____________________

(A–2) List two ways in which susceptible populations may be exposed to communicable disease.

1. ____________________
2. ____________________

(A–3) Answer "A" for appropriate or "I" for inappropriate for each statement below:

___ A new surveillance system should be established for the entire area, designed for this specific disaster.
___ The existing surveillance system should be used for the northern area, and a traditional surveillance system should be implemented in the southern area during the immediate postdisaster period.
___ Only official data sources should be used since unofficial sources, such as newspapers, may exaggerate problems or report rumors.
___ Ad hoc relief teams in the disaster area are good sources of information, particularly in the southern area.
___ It is of little value to receive reports of symptoms since surveillance must be in terms of specific diseases.

(A–4) List three criteria, important to the national epidemiologist, in selecting sites for tent camps.

1. ____________________
2. ____________________
3. ____________________
(A–5) Answer "A" for appropriate or "I" for inappropriate for each statement below:

____ Have a respected national authority deny the rumor until more information is available.

____ Try to contact health units in the area by radio to obtain more information.

____ Take an epidemiologist away from other duties and send him to the area to investigate.

____ Dispatch supplies of gamma globulin and influenza vaccine to the area for a mass immunization program, in case the rumor proves to be true.

____ Cases of influenza in the area are confirmed by physicians in the area, so it is not necessary to use busy laboratory personnel and equipment to confirm the diagnoses.

Course evaluation

Self Study Course on Epidemiologic Surveillance

1. What is your present position?___________________________________________

2. How many years have you spent in disaster−related work?___________________

3. How many years of formal education do you have?
   ____ 0 to 6 years
   ____ 7 to 12 years
   ____ 12 to 16 years
   ____ more than 16 years

4. How was the level of content in this course?
   ____ too difficult
   ____ about right
   ____ too easy

5. Was the course material relevant to your work?
   ____ yes
   ____ no

6. How useful to you were the various components of the course? (Circle)

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<th>OK</th>
<th>Not Useful</th>
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<td>Study Guide</td>
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<td>2</td>
<td>3</td>
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<td>Textbook (PAHO Sci. Pub. #420)</td>
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<tr>
<td>Self−Assessment Tests</td>
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7. How valuable to you was the total course? (Circle)

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8. Additional comments______________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Please return this to:
Disaster Management Center
Final exam answer key – A

To be used in conjunction with
Pan American Health Organization
Scientific Publication No. 420

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WORLD HEALTH ORGANIZATION
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Engineering and Applied Science
432 North Lake Street
Madison, Wisconsin 53706

608−262−2061 Telex No: 265452

Answer Key – Epidemiologic Surveillance

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Disaster Development Problem – Flood

Note: Page numbers cited refer to Pan American Health Organization Scientific Publication No. 420, Epidemiologic Surveillance after Natural Disaster.

(A−1) Any three of the following answers are acceptable:

1. Changes in preexistent levels of disease

Usually the risk is proportional to the endemic level prior to the disaster. There is generally no risk of a given disease when the organism which causes it is not present beforehand, unless it is introduced by relief workers or supplies.

2. Ecological changes caused by the disaster

Vector−borne and water−borne diseases are the most significantly affected.

3. Population displacement

Movement of populations may affect the relative risk in three ways: (1) facilities and services of the receiving community are strained (2) the displaced population will encounter diseases not prevalent in their community and (3) displaced populations may bring agents or vectors with them.
4. Population density

This is a critical factor in the transmission of diseases spread by the respiratory route and through person–to–person contact.

5. Disruption of public utilities

Electricity, water, sewage disposal, etc. may be interrupted after a disaster. There is greater potential risk of water– and food–borne disease outbreaks in developed areas which are more dependent on these services than in less developed ones which are less dependent and probably have a higher level of natural immunity.

6. Interruption of basic public health services

Basic services such as vaccination, vector control, etc. are interrupted and for financial or other reasons may not be reestablished at sufficient levels. An outbreak may occur months after the disaster.

(A–2) Any two of the following answers are acceptable:

1. Migration of rural populations to congested areas

The present pattern of reaction to many disasters is one in which people congregate for food, safety, and medical attention. The more rural and isolated migrants usually have a greater susceptibility to common communicable diseases and are less likely to have received childhood immunizations.

2. Migration of urban populations to rural areas

This occurs more rarely than the situation above, but involves the risk of greater exposure to vector–borne diseases, particularly malaria.

3. Immigration of susceptibles to affected areas

Poorly briefed, underprovisioned international relief workers entering the disaster area are at risk. Established relief agencies are aware of this, but ad hoc voluntary groups may not be.

(A–3) Correct Answers:

I – inappropriate

The need for coordination of efforts after disaster with the normal surveillance activities in the health sector must be emphasized. The usual impulse after disaster is, however, for relief authorities to set up a separate postdisaster surveillance/assessment system.

I – inappropriate

Any attempt to establish a traditional surveillance system in an affected area during the immediate postdisaster period is fruitless.

I – inappropriate

Since unofficial reporting systems may still be operational, they should be exploited to the fullest extent possible. Intelligence (albeit frequently in the form of rumors) spreads from affected areas extremely rapidly via the media, survivors, and relief officers returning from the field.

A – appropriate

Surveillance information from ad hoc relief sources is critical in disaster–struck areas which lack a preexisting mechanism of surveillance.

I – inappropriate

Under some circumstances, the decision to institute a symptom or symptom complex reporting system for common conditions may be taken, rather than attempting etiologic diagnoses. Use of case definitions and
symptom complexes must be standardized throughout the relief effort.

(A-4) Any three of the following answers are acceptable:

1. The slope of the land and nature of the soil should favor easy drainage.
2. There should be protection from adverse weather conditions.
3. Sites should be away from mosquito breeding places.
4. Sites should be away from refuse dumps.
5. Sites should be away from commercial and industrial areas.

(A-5) Correct Answers:

I – inappropriate

A potentially more serious operational problem exists when local or national authorities deny rumors which have not been investigated.

A – appropriate

To confirm and/or quantify the magnitude of a problem indicated by rumor, the epidemiology staff should try to canvass reporting units in the area by radio.

A – appropriate

Immediately dispatching a team to look into the report is the quickest and most visible and effective response available.

I – inappropriate

Neither gamma globulin nor influenza vaccine is recommended for mass immunization after disaster. Efforts to achieve mass vaccination in the relief phase also drain whatever limited manpower, communication facilities, and transportation exist.

I – inappropriate

Not all notifiable communicable diseases can be diagnosed with confidence on the basis of clinical criteria alone.

The importance of precise diagnosis of an outbreak-causing agent is important. For example, of influenza, dengue and typhoid fever, the first two require supportive care.