MGT 433: Prerequisite Module

< Video-based Review of Module 5 Materials >

Overview

When planning for potential disease outbreaks in rural communities that operate on limited fiscal budgets, it is essential that emergency planners not only assess the resources that would be used by various personnel in order to effectively detect, respond to, and contain a contagious disease but also survey existing resources in their respective jurisdictions. This module is delivered as a web-based prerequisite, offered also as a take-home reference.

Terminal Learning Objectives (TLO)

Upon completion of this module participants will acquire a broad understanding of the various types of personnel, durable, and consumable resources used to control the spread of communicable diseases in rural communities. This module provides examples of resources identified in a sample communicable disease response plan and induces course participants to determine the types of resources their respective jurisdictions need in order to effectively implement isolation and quarantine.

Enabling Learning Objectives (ELO)

5-1. Describe resource challenges rural communities face when enacting isolation and quarantine measures.

5-2. Explain the advantages of typing resources according to NIMS guidance.

5-3. Explain how the Emergency Management Assistance Compact offers assistance during governor-declared states of emergency.

5-4. Explain how the Strategic National Stockpile is activated and list the supplies available.

5-5. Define syndromic surveillance and list available disease surveillance tools.

5-6. Identify the exposure risk level for various occupations.

5-7. List resources used to implement standard precautions as a means of preventing direct contact with body fluids, secretions, excretions, non-intact skin, and mucus membranes.

Practical Exercise Statement

As a module delivered as a web-based prerequisite, participants will exercise knowledge by answering discussion and review questions throughout the module.

Assessment Strategy

Participant knowledge is assessed during the pre- and post- tests taken during course delivery.

Reference List

Centers for Disease Control and Prevention. (n.d.). Preparedness for all
hazards. Retrieved from: http://www.bt.cdc.gov/hazards-all.asp

Centers for Disease Control and Prevention. (2012). Strategic national stockpile.
Retrieved from: http://www.bt.cdc.gov/stockpile/

Centers for Disease Control and Prevention. (n.d.). U.S. Quarantine Stations.
Retrieved from: http://www.cdc.gov/quarantine/pdfs/us-quarantine-stations.pdf

Environmental Health Officer Professional Advisory Committee. (n.d.). Part 2: Public
health guidance for state and
local partners. Retrieved
from:http://www.ehopac.org/resources/ehopac_dvd/Docs/Additional_Resources/par...

Federal Emergency Management Agency. (n.d.) Emergency management assistance
compact (EMAC) Retrieved
from:http://www.fema.gov/pdf/emergency/nrf/EMACoverviewForNRF.pdf

Federal Emergency Management Agency. (n.d.). Resource management. Retrieved
from: http://www.fema.gov/resource-management

Federal Emergency Management Agency. (2011). National Disaster Recovery
Framework: Strengthening Disaster Recovery for the Nation.

Federal Emergency Management Agency. (2011). National Incident Management
System. Retrieved from: www.fema.gov/pdf/.../nims/nims_cred_guidelines_report.pdf

Lemon, S.M., Hamburg, M.A.,Sparling, P.F., Choffnes, E.R., and Mack, A. (2007).
Global Infectious Disease Surveillance and Detection:Assessing the Challenges --
Finding Solutions, Workshop Summary. Retrieved
from:http://www.nap.edu/openbook.php?record_id=11996&page=1

National Association of County & City Health Officials. (2005). The local health
department workforce: Findings from

the 2005 national profile of local health departments study. Retrieved from: http://www.naccho.org/topics/infrastructure/profile/upload/LHD_Workforce-Final.pdf

Occupational Safety and Health Administration. (2007). Guidance on preparing workplaces for an influenza pandemic. Retrieved from:http://www.osha.gov/Publications/influenza_pandemic.html

MGT 433: Rural I&Q Resource Challenges

Rural public health agencies often face the following challenges in responding to any health emergency, including emergencies requiring isolation and/or qurantine.

- Smaller workforces with fewer or no mental health providers, public health nurses or environmental scientists
- Lack of hazardous materials handling services
- Lack of access to technology like internet or email

Inadequate capacity related to staffing and facility shortfalls will disproportionately affect hospital emergency departments. Of all hospital departments, emergency rooms are most likely to bear the brunt of a surge in patients. Also, rural EMS systems experience major challenges in day-to-day provision of emergency medical care by increasingly becoming a public health safety net for primary care. This often results in overextended and underfunded EMS systems even without a disaster taking place.

A large scale infectious disease emergency could stretch limited rural EMS resources and infrastructure far beyond their capacity, necessitating mutual aid and effective coordination with federal, regional and state assets for an effective response. Rural EMS relies on a largely volunteer work force to respond to emergencies (National Association of County and City Health Officials [NACCHO], 2005).

Special efforts should be made to address planning issues in rural communities and other areas where emergency rooms and other resources for urgent care and emergency treatment are lacking. Without community-wide planning, a surge of patients could force the closure of local outpatient healthcare clinics needed for isolation

facilities. Planning partners may include healthcare providers at outpatient clinics, federally qualified health centers (FQHCs), IHS and tribal health care facilities, and other healthcare safety net providers that deliver care to low-income and other vulnerable populations. In some parts of the country, FQHCs and rural health clinics may need to rely on volunteers to provide and administer vaccines or other assistance (Environmental Health Officer Professional Advisory Committee [EHOPAC], n.d.).

Review

Which of the following statements is NOT true?

   A. Smaller tax bases in rural communities often means small budgets.

   B. Rural areas often lack mental health providers.

   C. Rural EMS relies on a largely volunteer workforce.

   D. Rural communities face the same challenges as their urban counterparts, just on a smaller scale.

MGT 433: NIMS Typed Resources

I&Q response activities require carefully managed resources (personnel, teams, facilities, equipment and/or supplies) to meet incident needs. Often lacking in rural communities, resources can be typed according to NIMS guidance, both to facilitate response and to identify resource gaps in advance.
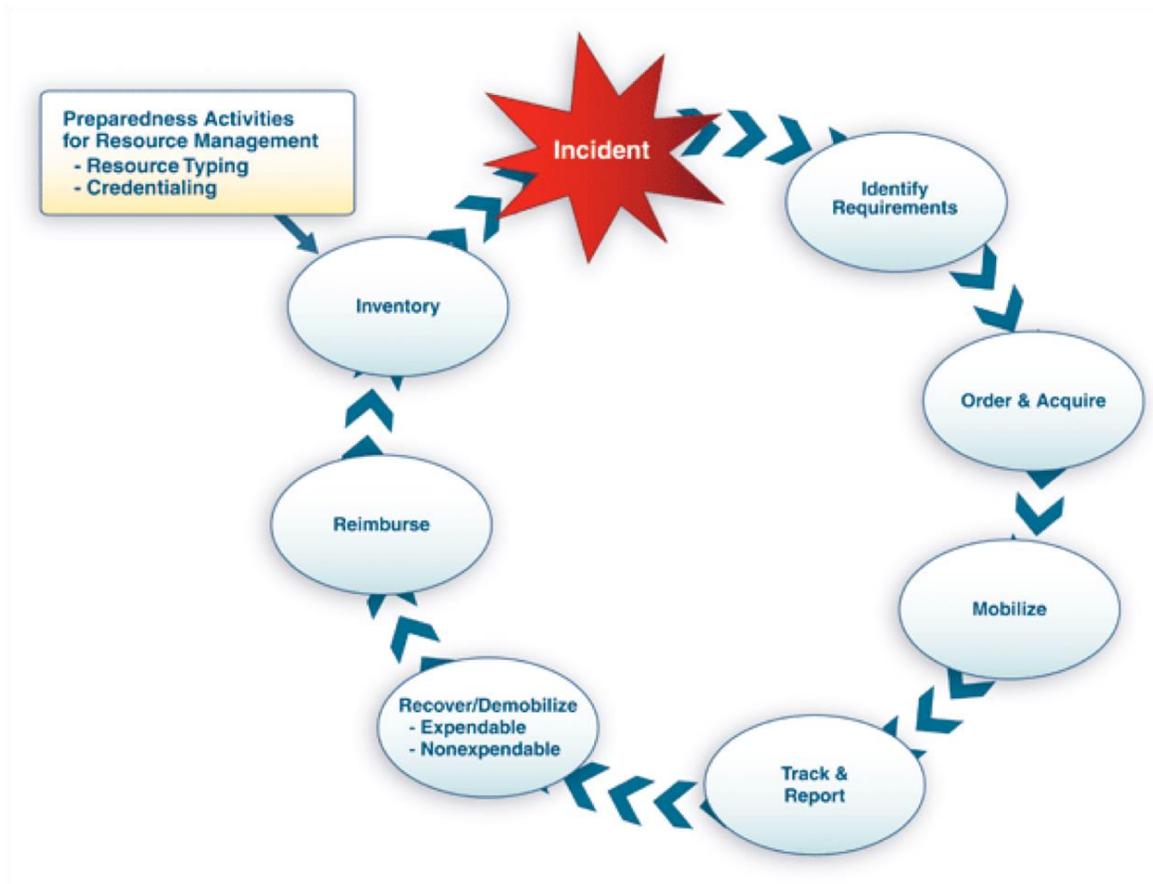
Typing should be an ongoing process, before, during, and after an I&Q response, as illustrated in the above figure (FEMA, 2011).

As noted in NIMS, type refers to the level of resource capability. Typing (categorizing, by capability, the resources requested, deployed, and used in incidents) provides managers with additional information to help select and use resources that are likely needed in response. The type assigned to a resource or a component is based on a minimum level of capability described by the identified measure(s) for that resource. This provision requires the identification of specific positions and job titles of responding personnel. Typing requires development of standards for qualifying for these positions and job titles (FEMA, 2011). An example using the position of medical supply coordinator is located in Appendix A. Appendix B holds tips for typing resources.

NIMS Incident Resource Inventory System (IRIS)

FEMA's National Preparedness Directorate (NPD) provides a no-cost resource inventory tool called the Incident Resource Inventory System (IRIS). IRIS allows response officials to enter typed and non-typed resources into a database and to search/identify specific resources for incident operations and mutual aid purposes. IRIS features the capability for users to inventory resources and share resource information with other agencies.

Users are also able to define non-typed resources and select specific resources for mutual aid purposes based upon mission requirements, the capability and availability of resources and desired response times (FEMA, n.d.).

The Emergency Management Assistance Compact (EMAC)

For low-resource rural communities seeking to enact large-scale I&Q measures, the Emergency Management Assistance Compact (EMAC) can be a very important aid to response. EMAC is an interstate mutual aid system agreed to through legislation by all 50 States, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands.

EMAC acts as a complement to the federal disaster response system, used either in lieu of federal assistance or in conjunction with federal assistance. EMAC also provides a way to mitigate resource deficiencies by ensuring maximum use of all available resources within member states' inventories (FEMA, n.d.).

Requests for EMAC assistance must be channeled through the state emergency management agency, according to the following basic procedure.

- The appropriate public health or medical entity should immediately contact the state EMA with a request for EMAC assistance.
- The state EMA will send the resource request to potential assisting state EMAs and will receive offers of assistance.

An EMAC request checklist is provided in Appendix C.

Mutual Aid - NIMS details mutual aid agreements and memorandums of understanding, both of which are needed between government agencies, the private sector and nongovernmental organizations like faith-based and nonprofit organizations

to facilitate timely delivery of assistance. A signed agreement does not obligate the provision or receipt of aid, but rather provides a tool for use should the incident dictate a need.

Healthcare professionals, public health and law enforcement personnel must understand each other's work, standards, and culture in order to join forces and be effective in a joint response. Liaison personnel are needed who have some degree of cross-training in both public health's role and methods of investigation involving diseases, and in law enforcement's role and methods of criminal investigations.

Mission Packages - Another way to expedite mutual aid is to create mission packages, which are developed by resource owners to "pre-package" resources. The mission package identifies the potential emergency response or recovery mission, resource type, limiting factors, time frames, location, equipment, logistical needs and estimated cost. Frequent training and exercises are critical to maintain readiness of the mission package.

CDC Resources

In addition to on-site guidance at a health emergency, the CDC offers a wealth of resources for local communities to prepare for a public health emergency. Much of the CDC's material deals with pandemic influenza, considered the most likely threat, but it can be adapted for incidents with other communicable diseases, especially those spread by coughing, sneezing, etc. There are many materials available through CDC websites. A short list is provided in Appendix E. They are divided into three categories.

- Guides
- Tools
- Communication and Education Materials

The Strategic National Stockpile (SNS)

The Strategic National Stockpile (SNS) (formerly the National Pharmaceutical Stockpile) is a national repository of critical medical supplies designed to supplement and resupply state and local public health agencies in the event of a national emergency anywhere and at any time within the United States or its territories (CDC, 2012).

The SNS program is managed by the CDC and is carried out in conjunction with state and local communities who have responsibility for developing their own local plans for the receipt and distribution of SNS supplies. SNS distributes medical supplies and provides technical assistance to states in their planning efforts related to the receipt and distribution of SNS assets. SNS only distributes medical supplies—it does not operate mass casualty centers or clinics.

The SNS contains multiple caches of medical supplies stored in warehouses in different regions across the country. These caches include:

- Antibiotics.
- Chemical antidotes.
- Antitoxins.
- Life-support medications.
- Intravenous (IV) administration.
- Airway maintenance supplies.
- Medical/surgical items.

SNS Activation

The affected state's governor's office requests SNS materials from HHS or CDC.

HHS assesses the situation and determines prompt and appropriate action. Upon federal approval, supplies are sent in "12-hour Push Packages," which contain a broad range of products that may be needed in the early hours of an emergency and are ready to be loaded on trucks or aircrafts.

These supplies go directly to predetermined sites, depending on the situation and the plans made by the affected community. Additional supplies through Vendor Managed Inventory and Stockpile Managed Inventory will be shipped to arrive within 24–36 hours. These shipments can be tailored to provide pharmaceuticals, supplies, and/or products specific to the suspected or confirmed agent(s).

Local and state officials are responsible for the distribution of SNS supplies once they arrive at agreed upon receiving sites. While SNS supplies are being transported, the

SNS program will deploy its Technical Advisory Response Unit to coordinate with state and local officials so that SNS supplies can be efficiently received and distributed upon arrival at the site.

Review

Read the situations described below and decide whether to procure the needed resources through NIMS IRIS, EMAC, or Strategic National Stockpile.

1. Due to the scale of the incident and media interest, you need a communications truck. As of now, this is the only thing you lack.

2. Local pharmacies are reporting shortages of antibiotics and steroid inhalers.

3. An infectious disease outbreak has resulted in 50 percent of your emergency response staff not reporting to work, including your epidemiologist. The local hospital is overwhelmed and overcrowded. In addition, vital equipment such as ambulances and machines for breathing treatments are in short supply.

MGT 433: Detection and Surveillance Resources

Early detection is essential to the control of infectious diseases, whether naturally occurring or intentionally introduced. Containing the spread of these diseases requires active surveillance for signs of an outbreak, rapid recognition, and diagnosis of cause (Lemon, Hamburg, Sparling, Choffnes, and Mack, 2007).

In the United States, healthcare providers and others report cases of "notifiable" infectious disease to health departments; health department officials verify disease reports, monitor disease incidence, identify possible outbreaks, and forward their findings to the CDC. The CDC and other federal agencies gather and analyze information for disease surveillance. This information is available through various channels, some of which are discussed in this module.

Syndromic Surveillance

Syndromic surveillance—the real time monitoring of nonspecific, prediagnostic indicators for disease outbreaks—has been widely adopted by cities, states, and the Federal Government as a means to provide early warning of infectious disease outbreaks.

Several syndromic surveillance systems are currently operational. The Real Time Outbreak and Disease Surveillance System (RODS) is used by several states to gather data on the symptoms of emergency room patients. The RODS laboratory at the University of Pittsburgh also created the National Retail Data Monitor (NRDM) to examine sales of over-the-counter healthcare products.

Many infectious disease threats manifest as syndromes with nonspecific "influenza-like symptoms." In the case of a rapidly spreading disease, laboratory diagnosis may be impossible. Under these circumstances, syndromic surveillance systems can alert public health authorities to an outbreak before it is revealed in reports from healthcare providers.

When people first develop symptoms following an exposure to an emerging infectious disease, they may be much more likely to treat themselves and stay home from work or school rather than seek care from a healthcare provider. Syndromic surveillance systems monitor existing descriptive data for clusters of these behaviors, including:

- School and work absenteeism.
- Sales of over-the-counter medications.
- Illness-related 911 calls.
- Emergency room admissions.

In addition to its potential to increase response speed, syndromic surveillance costs far less to implement than traditional, labor-intensive approaches to disease surveillance. Also, in remote areas, where clinicians may be in short supply, syndromic surveillance offers a promising model for disease detection.

Other Surveillance Tools

There are many surveillance networks and tools available for monitoring the spread of disease, developed at both the private and government levels, available via email list, website, or software purchase. These tools harness the power of disease surveillance around the world and help give a real-time view of disease transmission patterns. Some of these tools include the following.

ProMED Mail (PMM)—a free, nonprofit, noncommercial, moderated e-mail list

HealthMap—a freely available, web-based surveillance network

Global Outbreak Alert and Response Network (GOARN)—a surveillance network established by the World Health Organization

Global Avian Influenza Network for Surveillance (GAINS)—a bird-disease specific surveillance network developed jointly by the U.S. Department of Agriculture (USDA), the U.S. Agency for International Development (USAID), and the Food and Agriculture Organization of the United Nations (FAO)

BioSense 2.0—a program of the CDC that tracks health problems as they evolve.

Geographic Information Systems (GIS)— a technological tool, from various proprietary vendors, for comprehending geography and making intelligent decisions. Health professionals use GIS technology to:

- Discover geographic origins of symptomatic populations.
- Map disease spread.
- Locate laboratory specimen and medical supplies.
- Inventory hospital bed availability.
- Discover testing facilities proximity.
- Map medical personnel distribution
- Identify specific locations of vulnerable at-risk populations.
- Identify congregate groups targeted for preventive measures.
- Create maps to help organizations establish field clinics and locate medical supplies.
- Provide information relevant for community leadership planning and response.

A more extensive explanation of available surveillance tools can be found in Appendix 5-F.

Review

Which of the following is NOT a pre-diagnostic indicator of disease outbreak?

A. A spike in emergency room admissions

B. A spike in over-the-counter cold medications

C. High rate of school absenteeism

D. A spike in vaccinations

MGT 433: Workplace Exposure Protection Resources

For most employers, protecting their employees during an epidemic depends on emphasizing proper hygiene (cleaning hands and decontaminating surfaces) and practicing social distancing. Social distancing means reducing the frequency, proximity, and duration of contact between people (both employees and customers) to reduce the chances of spreading an infectious disease from person-to-person (Occupational Safety and Health Administration, 2007).

It is important to note that in addition to occupational exposure risks, employees will also have non-occupational exposure risks. These non-occupational exposure risks could include commuting to and from work on public transportation (e.g., bus or train) or other community exposures (e.g. shopping). By addressing nonoccupational exposure risks, employers and employees can minimize the chances of an employee bringing illness into the workplace.

To help employers determine appropriate work practices and precautions, the Occupational Safety and Health (OSHA) has divided workplaces and work operations into four risk zones, according to the likelihood of employees' occupational exposure. The pyramid on the following page represents how the risk will likely be distributed for the vast majority of American workplaces. Responders in an I&Q emergency, however, face much higher risk than in typical workplaces.

Very High Exposure Risk

Healthcare employees such as doctors, nurses, paramedics, or dentists performing certain procedures on known or suspected infected patients face a very high exposure risk. For example, procedures such as cough induction, tracheal intubations, bronchoscopies, or respiratory tract specimen collection carry a very high risk of exposure.

High Exposure Risk

Healthcare delivery and support staff, such as doctors, nurses, and other hospital staff who must enter patients' rooms, emergency medical technician staff transporting patients, or staff performing autopsies on known or suspected infected patients carry a high exposure risk.

Medium Exposure Risk

Employees frequently in contact with the general population, such as at schools, high population density work environments, and some high volume retail, carry a medium exposure risk.

Lower Exposure Risk (Caution)

Employees who have minimal occupational contact with the general public and other employees (for example, office employees) carry a lower exposure risk.

Standard Precautions

Standard Precautions prevent direct contact with body fluids (including blood), secretions, excretions, nonintact skin (including rashes), and mucous membranes. These standard precautions are listed below.

Handwashing. Wash with plain or antimicrobial-containing soaps after touching blood, body fluids, excretions, secretions, or items contaminated with such body fluids, whether or not gloves are worn. Wash hands immediately after gloves are removed, and between contact with other victims/patients.

Gloves. Wear clean, non-sterile gloves when touching blood, body fluids, excretions, secretions, or items contaminated with such body fluids. Put on clean gloves just before touching mucous membranes and nonintact skin. Change gloves between tasks.

Masks/Eye Protection or Face Shields. Wear a mask and eye protection to protect the mucous membranes of the eyes, nose, and mouth while performing tasks that may cause splashes of blood, body fluids, excretions, or secretions.

Gowns. Wear a gown to protect skin and prevent soiling of clothing during activities that are likely to generate splashes or sprays of blood, body fluids, excretions, or secretions. Gowns and gown materials suitable for the task and amount of body fluid likely to be encountered. Remove soiled gowns promptly.

Personal Protective Equipment (PPE) Considerations

Protocols for contact isolation will include the use of personal protective equipment (PPE), or specialized clothing or equipment worn by health workers and personnel involved in disease control activities. It is an integral part of routine infection control practice, and it is an important component of prevention and control activities. Compliance with the use of PPE and recommended infection control precautions is critical to prevent the transmission of the pathogens.

Higher levels of PPE (including respiratory equipment) may be required if the illnesses are associated with an agent that is the cause of a contagious disease, or if decontamination is required both at an incident scene and at the hospital for patients who are known or suspected to be contaminated.

Healthcare professionals will determine which PPE items must be worn when dealing with patients in contact isolation. A sign showing which PPE is required or instructions to see the nurse before entering the patient's room should be used to notify visitors and staff that special procedures are in effect. All hospital staff will be trained in SOP. Staff should demonstrate to any visitors, if allowed, how to put on and use the PPE properly.

Personal Protective Equipment (PPE) Considerations – Masks and Respirators

Some masks are approved by the FDA for their fluid-resistant properties, while other procedural masks are not. These disposable surgical or procedural masks can be used in an isolation and quarantine situation for a variety of reasons. OSHA provides some common uses of surgical masks, along with considerations when using them.

Per OSHA guidelines, surgical masks may be used for the following reasons:

In some isolation and quarantine settings, respirators are required. It is important that all respirators are National Institute for Occupational Safety and Health- (NIOSH-) certified, fit-tested N-95 respirators. The table in Appendix 5-G lists advantages and disadvantages of various kinds of respirators and facemasks (OSHA, 2007).

Appendix H shows stockpiling estimates for respirators and facemasks.

Review

(Answers beginning in Appendix B)

Choosing from the list below, match the occupation with the appropriate level of risk on the occupational risk pyramid.

A. Mortician

B. Dental hygienist

C. Warehouse manager

D. Convenience store clerk

MGT 433: Module Summary and Review

Module Summary

You should now be able to:

- Describe resource challenges rural communities face when enacting isolation and quarantine measures.
- Explain the advantages of typing resources according to NIMS guidance.
- Explain how the Emergency Management Assistance Compact offers assistance during governor-declared states of emergency.
- Explain how the Strategic National Stockpile is activated and list the supplies available.
- Define syndromic surveillance and list available disease surveillance tools.
- Identify the exposure risk level for various occupations.
- List resources used to implement standard precautions as a means of preventing direct contact with body fluids, secretions, excretions, non-intact skin, and mucus membranes.

Module Review

1. Describe resource challenges rural communities face when enacting isolation and quarantine measures.

2. Explain the advantages of typing resources according to NIMS guidance.

3. Explain how the Emergency Management Assistance Compact offers assistance during governor-declared states of emergency.

4. Explain how the Strategic National Stockpile is activated and list the supplies available.

5. Define syndromic surveillance and list available disease surveillance tools.

6. List resources used to implement standard precautions as a means of preventing direct contact with body fluids, secretions, excretions, non-intact skin, and mucous membranes.