Rural Emergency Preparedness

What All Rural Responders Must Know about Public Health Emergencies

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> "Throughout history,
> rural America has
> consistently done
> more with less,
> whether it be
> in regards to
> education, economic
> development,
> basic public health
> infrastructure,
> or healthcare."*
>
> *Congressman John E. Peterson
> 5th District, Pennsylvania*

Natural disasters, epidemics of disease, and potential impacts from bioterrorism do not discriminate according to population or geography. If we are to assure an adequate public health response to any emergency, we must have the ability to fulfill public health response functions regardless of geographic location or community public health capacity. The latter is a challenge in many states, including Pennsylvania, where rural areas have fewer public health resources upon which to rely in emergency situations.

Rural communities must be prepared not only to respond to unique local threats that may include agroterrorism and high-profile targets such as power-generating facilities and military installations, but also to the threat posed by urban citizens fleeing to the perceived safety of rural areas. This exact scenario was realized during the days leading up to, and in the immediate aftermath of Hurricanes Katrina and Rita in 2005. Given the dual nature of the potential threat in rural communities, both as a potential direct target and an evacuation destination, the challenge posed in assuring rural preparedness is significant.† Should a situation arise where evacuating citizens may have been exposed to a contagious disease, the challenge becomes even more daunting. Realizing that state and federal response resources are likely to be focused on larger population centers, rural communities face the possibility of being on their own to address the needs of their own citizens and the evacuees. Unfortunately, the situation becomes even more complex when rural areas require additional training and resources in response to emerging threats such as SARS and avian influenza.

With one of the largest rural populations in the nation, Pennsylvania must be prepared to address these concerns. Twenty-three percent of the Commonwealth's population lives in areas that are designated as rural and, except for Philadelphia, every county in Pennsylvania has areas classified as rural. Forty-eight of Pennsylvania's 67 counties are considered rural (based on population density) and four counties are 100 percent rural.‡ These distinctions bring with them significant challenges that must be recognized and acknowledged. These challenges can then be addressed through visionary leadership and collaboration.

In the end we must remember that all response is local. All of us - emergency responders, public health and healthcare professionals, local authorities, and others – must work together to assure that the health consequences of disasters, epidemics, and other emergency situations are minimized. This book is intended as both a resource and a guide for rural responders faced with public health emergencies – we hope you find it useful.

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* From a January 2005 letter in *Preparing for Public Health Emergencies: Meeting the Challenges in Rural America. Conference Proceedings and Recommendations, St. Paul, MN, September 27-28, 2004.* University of Pittsburgh Center for Rural Health Practice.

† Campbell, P., Frances, J., Meit, M. (2005). *Preparing for Public Health Emergencies: Meeting the Challenges in Rural America. Conference Proceedings and Recommendations, September 27-28, 2004, St. Paul, MN,* University of Pittsburgh Center for Rural Health Practice.

‡ Pennsylvania Rural Health Association (2005). *Status Check IV: Pennsylvania Rural Healthcare*

RURAL PREPAREDNESS CONCERNS

- Rural communities are home to many potential terrorist targets including nuclear power facilities, uranium and plutonium storage facilities, military installations, U.S. Air Force missile launch facilities, agricultural chemical plants, and petroleum refineries;

- Rural areas are the locus of agricultural production that could be key in targeting the food supply, as well as accessing agricultural chemicals;

- Rural economies often rely heavily on single industries or employers, making them economically vulnerable to terrorist threats. The local economy may or may not be the direct target of the terrorist activity, but may be heavily impacted regardless;

- The headwaters for much of the urban water supply are found in rural areas;

- Mass evacuation of urban communities will require a strong rural public health infrastructure. Rural hospitals do not have the capacity to handle large numbers of individuals seeking care, and rural communities often lack access to HAZMAT units and lack sufficient decontamination training;

- The proliferation of hate groups in rural America is a significant concern in terms of "home-grown" terrorism. Early identification of terrorist threats will require a strong rural public health infrastructure, including training to recognize early signs of biological and chemical experimentation;

- Infectious disease agents could be targeted towards smaller communities with less ability to recognize and track bioterrorist threats. To prevent spread of these agents, a strong infrastructure and adequate training will be necessary; and

- Many interstate transport companies are located in rural communities and provide transportation of hazardous materials via routes that cross rural America.

University of Pittsburgh Center for Rural Health Practice. (2004).
Bridging the Health Divide: The Rural Public Health Research Agenda. University of Pittsburgh at Bradford.

Emergency Public Health Functions

Chapter 1: Pre-Test

1. Name at least two disasters in Pennsylvania history
   a.
   b.

2. Which of the following can be the target of bioterrorism?
   a. Humans
   b. Animals
   c. Plants
   d. All of the above

3. Which of the following is not a basic component of public health surveillance?
   a. Data collection
   b. Analysis
   c. Treatment
   d. Dissemination of information

4. The "integrated network of state and local public health, federal, military, and international laboratories that can respond to bioterrorism, chemical terrorism and other public health emergencies" is known as the:
   a. Integrated Laboratory Network (ILN)
   b. Laboratory Response Network (LRN)
   c. Epidemic Intelligence Service (EIS)

What is Public Health?

The mission of public health is to "fulfill society's interest in assuring conditions in which people can be healthy." [1]

Public health carries out its mission through organized, interdisciplinary efforts that address the physical, mental and environmental health concerns of communities and populations at risk for disease and injury.

Its mission is achieved through the application of health promotion and disease prevention technologies and interventions designed to improve and enhance quality of life. Health promotion and disease prevention technologies encompass a broad array of functions and expertise, including the three core public health functions:

• Assessment and monitoring of the health of communities and populations at risk to identify health problems and priorities;

• Formulating public policies, in collaboration with community and government leaders, designed to solve identified local and national health problems and priorities; and

• Assuring that all populations have access to appropriate and cost-effective care, including health promotion and disease prevention services, and evaluation of the effectiveness of that care. [2]

What is an Emergency? What is a Disaster?

Emergencies are "any natural or man-made situation that results in severe injury, harm, or loss to humans or property." Public health emergencies include those situations that directly or indirectly threaten the health of populations, or affect the public health or healthcare systems' ability to provide essential services.

Disasters are emergencies of a severity and magnitude resulting in deaths, injuries, illness and/or property damage "that cannot be effectively managed by the application of routine procedures and resources." [3]

These events are caused by: nature; the result of technological or man-made error; intentional acts including domestic and international terrorism; and epidemics of recurring or emerging diseases. Disasters create several unique problems not encountered in the routine practice of emergency health care. Examples include the need for warning and evacuation, triage and casualty distribution (often in unfamiliar, non-clinical settings), widespread urban search and rescue, large-scale population and responder mental health issues, and coordination among multiple jurisdictions, levels of government, and private sector organizations in managing a damaged and disabled healthcare infrastructure.

Below is a select list of historical disasters. It illustrates the wide array of catastrophic events that can significantly impact lives and property in both urban and rural communities. Consider how such events might impact you, your role as a responder, and your community.

Natural Disasters

A natural disaster is a catastrophe that occurs when a hazardous physical event precipitates extensive damage to property, a large number of casualties, or both. In areas where there are no human interests, natural phenomena do not result in natural disasters.

Earthquake

An earthquake is a sudden shift or movement in the tectonic plate in the Earth's crust. Earthquakes occur along fault lines, and are highly unpredictable.

On September 19, 1985 the Michoacan or "Mexico City" earthquake, Richter scale magnitude 8.1, was one of the most devastating earthquakes in the modern history of the Americas. At least 9,500 people were killed, 30,000 injured, and more than 100,000 left homeless. One hundred thousand housing units were destroyed, and $3-4 billion in damage was caused in only three minutes. There was an additional magnitude 7.5 aftershock 36 hours later.[4]

The 1994 Northridge earthquake occurred on January 17th near the city of Los Angeles, California. The magnitude 6.7 earthquake was the most (monetarily) costly quake in United States history. The earthquake caused widespread damage, and thousands of aftershocks occurred during the following weeks, further damaging structures. This damage occurred up to 52 miles away, with the most damage in the west San Fernando Valley and the city of Santa Monica. The death toll was 61, more than 1,500 people were seriously injured, and there was over $40 billion in damage to property. Major freeway damage occurred up to 20 miles from the epicenter. It was one of the worst natural disasters in U.S. history.[5]

Hurricane/Cyclone/Typhoon

A hurricane is a cyclonic storm system which forms over the ocean. It is caused by evaporated water that comes off of the ocean and becomes a storm. The Coriolis Effect causes the storms to spin, and a hurricane is declared when this spinning mass of storms attains a wind speed of at least 75 mph. In different parts of the world hurricanes are known as cyclones or typhoons.

The Bhola cyclone and tidal surge occurred in East Pakistan (now Bangladesh) on November 13, 1970. It was one of the greatest tropical cyclones of the 20th century. On the night of November 12th a tropical cyclone in the Bay of Bengal was approaching the coast of East Pakistan. Winds in excess of 120 mph, combined with an exceptionally high tide of 15 to 20 feet, drove a tidal surge into the low-lying densely populated region in the early hours of the morning. The result was widespread flooding, with many people being drowned in their sleep. This was one of the most densely populated and impoverished areas in the world, with scarce medical resources and agricultural capacity.[6] The death toll has had several estimates, some wildly speculative, but at least 300,000 people died from the associated storm tide in the low-lying delta areas, making it the deadliest tropical cyclone on record and one of the deadliest natural disasters in modern times.[7]

Hurricane Katrina was the eleventh named tropical storm, fourth hurricane, third major hurricane, and first Category 5 hurricane of the 2005 Atlantic hurricane season. It first made landfall as a Category 1 hurricane just north of Miami, Florida, on August 25, 2005, then again on August 29th along the Central Gulf Coast near New Orleans, Louisiana, as a Category 4 storm. Its storm surge breached the levee system that protected New Orleans from Lake Pontchartrain. Most of the city was subsequently flooded by the lake's waters. This and other major damage to the coastal regions of Louisiana, Mississippi, and Alabama made Katrina the most destructive and costliest natural disaster in the history of the United States. The official death toll stands at over 1,250 and the damage higher than $200 billion, topping Hurricane Andrew as the most expensive natural disaster in U.S. history. Over a million people were displaced — a humanitarian crisis on a scale unseen in the U.S. since the Great Depression.

Ice Storm

An ice storm is a particular weather event in which precipitation falls as rain, due to atmosphere conditions, but in an area in which the temperature is below the freezing point of water. The rain falls to the ground, and immediately turns to ice, accumulating in that fashion. A heavy ice storm can cause large accumulations of ice and make trees fall over or lose branches, taking power and phone lines with them.

The worst ice storm in recent memory was the 1998 ice storm that struck eastern Canada and areas of the US northeast. Between January 5th and 10th, nearly double the average annual total of freezing rain fell, resulting in damaged trees and power lines, and dangerous conditions over an area of several thousand square miles of Eastern Ontario, Southwestern Quebec, Northern New York, and Northern Vermont. The storm left deposits, many inches thick, downing power lines all over the region, destroying or damaging most of the trees in Montreal, and leaving streets covered in a thick impassable layer of ice. Hospital emergency department visits and admissions throughout the

region, for musculoskeletal (fractures, contusions, sprains), skin (burn, frostbite), and head (concussion) injuries, as well as toxic gas inhalations such as carbon monoxide poisoning, were significant.[8]

Flood

Floods can be caused by prolonged rainfall from a storm, including thunderstorms, by rapid melting of large amounts of snow, by rivers that swell from excess precipitation upstream and cause widespread damage to areas downstream, or less frequently the bursting of man-made dams or levees, or by a combination of the above.

The 1931 Huang He floods (Yellow River Floods) are generally thought to be the deadliest natural disaster of historic times, and certainly of the 20th century (when pandemics are excluded). Estimates of the number of people killed range from 850,000 to 4,000,000. Deaths caused by the flooding include but are not limited to drowning, disease, and ensuing famine. According to a September 3, 1931 New York Times article, the Yellow River, "known as 'China's Sorrow,' rose to dangerous heights for 400 miles of its meandering course across Honan and Shantung Provinces." Further, "Hundreds of miles down its course, the Yangtse burst several dykes at Sinti. Eighty thousand persons clung to remaining levees, awaiting food and medicines by boats."

The Johnstown Flood disaster (or Great Flood of 1889) occurred on May 31, 1889. It was the result of several days of extremely heavy rainfall, which caused the failure of the South Fork Dam situated 14 miles upstream of Johnstown, Pennsylvania, unleashing a torrent of 20 million gallons of additional water. In the hills above the city, the industrial elite of nearby Pittsburgh had built a private resort including an artificial lake contained by this poorly designed and ill-maintained earthen dam. Over 2,200 of Johnstown's 30,000 people died, and much of the city was leveled. There was $17 million in damage. It was the first major disaster relief effort handled by the new American Red Cross supervised directly by Clara Barton. Support for victims came from all over the United States and 18 foreign countries. By year's end, Johnstown was nearly rebuilt. It remains one of the greatest disasters in U.S. history.[9]

Tornado

Tornadoes are violent, rotating columns of air which can blow at speeds between 50 and 300 mph, and possibly higher. Tornadoes can occur one at a time or in large tornado outbreaks along squall lines or in other large areas of thunderstorm development.

On May 31, 1985, at least 42 tornadoes touched down in Pennsylvania, Ohio, New York, and southeastern Ontario, Canada. There were 88 fatalities, of which 64 occurred in Pennsylvania.

Many more people were injured; countless homes, businesses, and other structures were damaged or destroyed. The National Climatic Data Center reported that the tornadoes in May 1985 were "the most devastating outbreak of tornadoes since the super-outbreak of April 3-4, 1974," when 140 twisters struck a path from Illinois, through Kentucky and West Virginia, to Alabama and Georgia, killing 315 people.[10]

Tsunami

A tsunami is a giant wave of water caused by undersea earthquakes as in the 2004 Indian Ocean Earthquake, or by landslides into a body of water such as the one that occurred at Lituya Bay, Alaska in 1964. It comes from a Japanese word meaning harbor and wave.

On December 26, 2004, a tsunami, caused by the Sumatra-Andaman undersea earthquake, struck off the Indonesian island of Sumatra. Over the next seven hours, the tsunami spread across the Indian Ocean, devastating coastal areas as far away as East Africa. This was the deadliest tsunami in recorded history. Approximately 275,000 people in many Asian and African countries, some several thousand miles away, were killed, and entire towns and islands were completely destroyed. The lack of food, clean water, medical treatment, and logistical capability to move supplies and relief workers to the effected areas increased the number of casualties significantly.[11]

Technological Disasters

Chemical/Hazmat/Biological

This type of disaster can manifest in a wide variety of ways, as evidenced by the examples below. Human error is almost always the cause.

The Bhopal Disaster of 1984 was the worst known industrial disaster in modern history. It was caused by the accidental release of 40 metric tons of methyl isocyanate (MIC) from a Union Carbide pesticide plant located in the heart of the city of Bhopal, in the Indian state of Madhya Pradesh. The accident occurred in the early hours on December 3rd, producing heavier-than-air toxic MIC gas that rolled along the ground through the surrounding streets killing 3,000-7,000 immediately and severely injuring 50,000-100,000 others, at least 15,000-20,000 of whom died later from their injuries.[12]

On April 2, 1979, there was an accidental aerosolized (weaponized) anthrax release which affected 94 people, killing at least 64, in the Soviet city of Sverdlovsk (now called Ekaterinburg), roughly 850 miles east of Moscow. The first victim died four days after exposure; the last one died six weeks later. The Soviet government claimed the deaths were caused by intestinal anthrax from tainted meat, a story some influential American scientists found believable. It wasn't until 13 years later in

1992 that President Boris Yeltsin admitted, without going into detail, that the anthrax outbreak was the result of an accidental release from a secret bioweapons lab located inside the city.[13]

In March 1995, sarin gas, a weapon of mass destruction originally developed in Nazi Germany, was placed simultaneously in five subway cars at morning rush hour in Tokyo, Japan. This act of domestic terrorism was perpetrated by members of the religious group Aum Shinrikyo. In the coordinated attacks, cult members released sarin gas on several lines of the Tokyo subway, killing 12 people and injuring approximately 6,000, causing widespread panic. The attack was directed against trains passing through Kasumigaseki and Nagatacho, home to the Japanese government. This was the first large-scale terrorist attack by a civilian group using a toxic chemical agent against innocent civilians. It became the focus of worldwide assessment of potential attacks by terrorists using chemical weapons of mass destruction in transportation systems.[14]

On January 6, 2005, in Graniteville, South Carolina, a train carrying hazardous materials derailed near a switchyard, causing a green cloud of toxic chlorine gas to leak. The accident resulted in the release of at least 90 tons of the gas into the environment. Ten people died (nine at the time of the accident, one later due to chlorine inhalation), and at least 250 people were treated for chlorine exposure. Approximately 5400 residents within a mile of the crash site were forced to evacuate for nearly two weeks while HAZMAT teams and cleanup crews decontaminated the area. Even though this accident did not show any signs of involving terrorism, safety officials point to long-known safety problems in the rail system that could be easily exploited by terrorists. Each year in the U.S., at least one or two derailments involving trains carrying hazardous materials prompt entire towns to evacuate.[15]

Explosions/Bombings
On April 19, 1995, in Oklahoma City, Oklahoma, a massive homemade bomb concealed in a rental truck exploded, destroying the Alfred P. Murrah Federal Building. More than 500 were injured and 168 people were killed, including 19 children. The bombing remained the deadliest terrorist assault on U.S. soil until the September 11, 2001, terrorist attacks in New York, Washington, and Shanksville, Pennsylvania.[16]

On September 11, 2001, the United States experienced a terrorist attack using commercial airplanes in New York City, Washington, D.C., and Shanksville, Pennsylvania, resulting in 2,986 deaths and billions of dollars of damage. According to the official 9/11 Commission Report, 19 men affiliated with Osama bin Laden and Al-Qaeda, a loose network of Sunni Islamist terrorists, simultaneously hijacked four U.S. domestic commercial airliners.

Two were crashed into the World Trade Center in Manhattan, New York City — one into each of the two tallest towers about 18 minutes apart — shortly after which both towers collapsed. The third aircraft crashed into the U.S. Department of Defense headquarters, the Pentagon, in Arlington County, Virginia. The fourth plane crashed into a rural field in Somerset County, Pennsylvania, 80 miles east of Pittsburgh, following passenger resistance. In addition to the extensive death, injury, and destruction, the attacks triggered an enormous effort to combat terrorism at home and abroad.[17]

Radiological/Nuclear
During World War II, the United States military dropped atomic bombs on the cities of Hiroshima and Nagasaki, Japan, on August 6th and August 9th, 1945, respectively. At least 120,000 people, about 95% of whom were civilian, were killed outright, and twice as many more died in the following months and years. The explosions vaporized everything in the immediate vicinity. These were the first and only use of nuclear warfare in history.[18]

The accident at the Three Mile Island Unit 2 (TMI-2) nuclear power plant at Harrisburg, Pennsylvania, on March 28, 1979, was the most serious in U.S. commercial nuclear power plant operating history, even though it led to no deaths or injuries to plant workers or members of the nearby community. An unlikely sequence of events - equipment malfunctions, design related problems and worker errors – resulted in a partial meltdown of the reactor core. As a result of the accident, radioactive water was released into the Susquehanna River and radioactive steam escaped into the atmosphere. News of the accident produced near-panic among local residents. Initial responses by government and industry officials downplayed the seriousness of the situation and, in some cases, were self-serving and misleading. Nevertheless, the incident eventually brought about sweeping changes involving emergency response planning, reactor operator training, human factors engineering, radiation protection, and many other areas of nuclear power plant operations. It also caused the U.S. Nuclear Regulatory Commission (NRC) to tighten and heighten its regulatory oversight. Resultant changes in the nuclear power industry and at the NRC had the effect of enhancing safety.[19]

On April 26, 1986, the world's worst nuclear power accident occurred at Chernobyl in the former USSR (now the country of Ukraine). The Chernobyl plant is located 80 miles north of Kiev, a city of over 2 million people. During an unauthorized test of one of the plant's four reactors, engineers accidentally initiated an uncontrolled chain reaction in the reactor core after disabling emergency backup systems. An explosion blew off the top of the reactor's concrete and steel containment building, expelling radioactive material into the atmosphere.

More radioactive material was released in the subsequent fire. The incident was controlled only through the selfless work of local firefighters, 20 of whom died from overexposure to radioactivity. Forty-seven workers died afterward, and residents numbering in the hundreds of thousands were evacuated and resettled, but only after much exposure had already occurred. The radioactive plume crossed many other countries and caused significant agricultural contamination. Only after Swedish instruments detected fallout from the explosion did Soviet authorities admit that an accident had occurred. A significant increase in cases of thyroid cancer in Ukrainian children has been noted so far, with other longer-term effects possible. Ukraine has estimated that 8,000 people died as a result of the accident and during its cleanup.[20]

Epidemics

- Epidemics occur when there are more cases of disease than expected in a given area or among a specific group of people over a particular period of time.

- Outbreaks are synonymous with epidemics. "Outbreak" is sometimes the preferred word, as it may escape sensationalism associated with the word "epidemic."

- Pandemics are epidemics as well, but occur over a very wide area (several countries or continents) and usually affect a large proportion of the population.

Caused by the rod-shaped bacterium Yersinia pestis, Bubonic Plague is an acute and severe infection. A bubonic plague pandemic (The Black Death) first struck Europe in the mid-14th century (1347–50), and was estimated to have killed about a third of Europe's population. A series of plague epidemics also occurred in large portions of Asia and the Middle East during the same period, which indicates this outbreak was actually a worldwide pandemic. The same disease is thought to have returned to Europe every generation with varying degrees of intensity and fatality until the 1700s. Historical records attribute the Black Death to fleas, carried by animals such as the black rat (Rattus rattus), although today's experts debate both the microbiological culprit and mode of transmission. Public health and security experts warn of the potential use of plague as an agent of bioterrorism or in biological warfare.[21]

Smallpox (also known by the Latin names Variola or Variola vera) is a highly contagious disease that infects only humans. It is caused by two virus variants called Variola major and Variola minor. V. major is the more deadly form, with a typical mortality of 20-40 percent of those infected. The other type, V. minor, only kills one percent of its

victims. Smallpox was responsible for an estimated 300-500 million deaths in the 20th century. As recently as 1967, the World Health Organization (WHO) estimated that 15 million people contracted the disease and that two million died in that year. After successful vaccination campaigns, the WHO, in 1979, declared the eradication of smallpox, though cultures of the virus are kept by the Centers for Disease Control and Prevention (CDC) in the United States and at the Institute of Virus Preparations in Siberia, Russia. Smallpox vaccination was discontinued in most countries in the 1970s as the risks of vaccination at that point outweighed the benefits.[22]

The Spanish Flu Pandemic, also known as the Great Influenza Pandemic, the Influenza Epidemic of 1918-1919, and La Grippe, was an unusually severe and deadly strain of influenza, a viral infectious disease, that killed some 25 million to 50 million people worldwide in 1918 and 1919. In terms of total numbers of deaths, it is among the most devastating epidemics in human history. It was caused by the H1N1 type of flu virus. The pandemic occurred in three waves. The first appeared during World War I in Camp Funston, Kansas, U.S., in early March 1918. American troops arriving home from Western Europe are thought to have brought the virus with them. This first wave was relatively mild; however, later that summer a more lethal type of disease was recognized, fully emerging in August 1918. Those infected often quickly developed pneumonia, with death usually coming two days after the first indications of the flu. The third wave occurred the following winter, and by the spring of 1919 the virus had run its course. In the two later waves, approximately half of the deaths were among 20 to 40-year olds, an unusual mortality age pattern for influenza.[23]

Severe Acute Respiratory Syndrome (SARS) initially appeared as an atypical and deadly form of pneumonia. It first appeared in November 2002 in Guangdong Province, China. SARS is now known to be caused by the SARS corona virus (SARS-CoV), a novel corona virus. SARS has a mortality rate of around ten percent. The disease spread rapidly, reaching neighboring Hong Kong and Vietnam in late February 2003, and then to other countries via international travelers. The last case in this outbreak occurred in June 2003. There were a total of 8,069 cases of disease and 775 deaths. In Canada there were 438 probable and suspected cases, including 44 deaths. Among healthcare workers there were more than 100 probable cases, including three deaths. During the height of the outbreak in Canada, hospitals were shut down, elective procedures were cancelled, supplies procurement was difficult, and the provincial economy was brought to a virtual standstill.[24]

Preparing for a Pandemic Influenza in the 21st Century

Many scientists believe it is only a matter of time until the next influenza pandemic occurs.   The severity of the next pandemic cannot be predicted, but modeling studies suggest that the impact of a pandemic on the United States could be substantial. In the absence of any control measures (vaccination or drugs), it has been estimated that in the United States a "medium–level" pandemic could cause 89,000 to 207,000 deaths, 314,000 to 734,000 hospitalizations, 18 to 42 million outpatient visits, and another 20 to 47 million people being sick. Between 15% and 35% of the U.S. population could be affected by an influenza pandemic, and the economic impact could range between $71.3 and $166.5 billion.

Influenza pandemics are different from many of the threats for which public health and healthcare systems are currently planning:

• A pandemic will last much longer than most public health emergencies and may include "waves" of influenza activity separated by months (In 20th-century pandemics, a second wave of influenza activity occurred 3 to 12 months after the first wave.)

• The numbers of healthcare workers and first responders available to work can be expected to be reduced. They will be at high risk of illness through exposure in the community and in healthcare settings, and some may have to miss work to care for ill family members.

• Resources in many locations could be limited, depending on the severity and spread of an influenza pandemic.

Because of these differences and the expected size of an influenza pandemic, it is important to plan preparedness activities that will permit a prompt and effective public health response. The U.S. Department of Health and Human Services (HHS) supports pandemic influenza activities in the areas of surveillance (detection), vaccine development and production, strategic stockpiling of antiviral medications, research, and risk communications. In May 2005, the U.S. Secretary of HHS created a multi-agency National Influenza Pandemic Preparedness and Response Task Group. This unified initiative involves CDC and many other agencies (international, national, state, local and private) in planning for a potential pandemic. Its responsibility includes revision of a U.S. National Pandemic Influenza Response and Preparedness Plan.

CDC. (October 2005). Pandemic influenza: Key facts about pandemic influenza. Available online: http://www.cdc.gov/flu/pandemic/keyfacts.html

What is Terrorism?

Terrorism is the "use of force or violence against persons or property in violation of criminal laws of the United States for purposes of intimidation, coercion, or ransom. Terrorists often use threats to create fear among the public, try to convince cities that their government is powerless to prevent terrorism, and to get immediate publicity for their causes."

The Federal Bureau of Investigation (FBI) categorizes terrorism in the United States as one of two types: domestic terrorism or international terrorism. Domestic terrorism involves groups or individuals whose terrorist activities are directed at elements of our own government or population without foreign direction. International terrorism involves groups or individuals whose terrorist activities are based and/or directed by countries or groups outside the United States whose acts transcend national boundaries.

What is Bioterrorism?

Bioterrorism is the "unlawful release of biologic agents or toxins with the intent to intimidate or coerce a government or civilian population to further political or social objectives. Humans, animals, and plants are often the target."[26]

While bioterrorism, and other incidents involving weapons of mass destruction (WMD), can result in mass casualties, these incidents differ from typical disasters. Unlike most chemical, radiological, nuclear, or explosive incidents, those involving biologic agents or toxins may not be recognized until casualties appear. Responders and health care personnel are at higher risk themselves and may unknowingly become contaminated, or allow their ambulances or hospital emergency departments to become contaminated before they know that anything is wrong. Victims could unwittingly carry the agent across large geographic areas via mass transport. The scope of the initial incident may expand exponentially and affect multiple jurisdictions. The fear of the unknown may create widespread anxiety in the public, resulting in drastically larger numbers of worried well than of actual victims. According to the CDC as many as 32,000 people in the Washington, D.C., area alone had taken antibiotics in response to the anthrax incidents of 2001. Most of these individuals had experienced no likely exposure. Ultimately, 18 cases total were confirmed in the United States, and four additional cases were suspected; there were five deaths in total.[27] In such instances where panic predominates, hospitals, medical provider offices, specialized HAZMAT, and medical response teams may become quickly overwhelmed.

Agents and Types of Bioterrorism Materials

An act of biological terrorism might range from dissemination of aerosolized anthrax spores to food product contamination.[28] Terrorist incidents involving anthrax in 2001 and the lethal plant toxin ricin in 2003 and 2004 have demonstrated that the United States is vulnerable to biological threats. Ricin attacks were documented in October and November of 2003 and February 2004 against U.S. politicians and institutions.

Public health and primary healthcare providers, as well as first responders, must be well-prepared to address varied biologic agents, including pathogens that are rarely seen in the United States. These high-priority agents, or "critical" biological agents, are divided into three categories: A, B, and C.

Category A

High-priority agents include organisms that pose a risk to national security because they can be easily disseminated or transmitted person-to-person; cause high mortality, with potential for major public health impact; may cause public panic and social disruption; and require special action for public health preparedness (see list below in "Steps in Preparing for Biological Attacks").

Category A Agents include:
- Variola major (smallpox)
- Bacillus anthracis (anthrax)
- Yersinia pestis (plague)
- Clostridium botulinum toxin (botulism)[29]
- Francisella tularensis (tularemia)[30]
- Viral hemorrhagic fevers
  - filoviruses (e.g., Ebola, Marburg)
  - arenaviruses (e.g., Lassa, Machupo)

Category B

Second highest priority agents include those that are moderately easy to disseminate; cause moderate morbidity and low mortality; and require specific enhancements to our public health system's diagnostic capacity and enhanced disease surveillance.

Category B Agents include:
- Coxiella burnetti (Q fever)
- Brucella species (brucellosis)
- Burkholderia mallei (glanders)
- Alphaviruses
  - Venezuelan encephalomyelitis
  - Eastern and western equine encephalomyelitis
- Ricin toxin from Ricinus communis (castor beans)
- Epsilon toxin of Clostridium perfringens
- Staphylococcus enterotoxin B

Category C

Third highest priority agents include emerging pathogens that could be engineered for mass dissemination in the future because of availability; ease of production and dissemination; and potential for high morbidity (illness) and mortality (death) and major health impact.

Category C Agents include:
- Nipah virus
- Hantaviruses
- Tick-borne hemorrhagic fever viruses
- Tick-borne encephalitis viruses
- Yellow fever
- Multidrug-resistant tuberculosis

Bioterrorism in History

The use of bioterrorism in history dates back to at least the sixth century B.C.E. when Assyrians poisoned enemy wells with rye ergot, a fungus that causes convulsions when ingested. During the Middle Ages, Tartar forces attacked enemies by catapulting plague infected corpses and heads over fortress walls, forcing defenders to surrender.[31] More recent examples include:

• In 1972, members of a U.S. Fascist group called Order of the Rising Sun were found to be in possession of 30-40 kilograms of typhoid bacteria cultures, with which they planned to contaminate water supplies in Chicago, St. Louis, and other Midwestern cities.

• In 1978, the Bulgarian dissident Georgi Markov was assassinated by Bulgarian secret police who surreptitiously 'shot' him on a London street with a modified umbrella using compressed gas to fire a tiny pellet contaminated with ricin into his leg. He died in the hospital a few days later; the pellet was discovered by chance during an autopsy.

• In 1984, two members of an Oregon cult headed by Bhagwan Shree Rajneesh cultivated salmonella bacteria and used it to contaminate restaurant salad bars in an attempt to affect the outcome of a local election. Although 751 people became ill and 45 were hospitalized, there were no fatalities. The deliberate use was not recognized until later disclosed by one of the cult members.

• In the fall of 2001, intentional anthrax attacks in the United States occurred over the course of several weeks, beginning on September 18 (after the September 11th destruction of the New York City World Trade Center). Intentional delivery of Bacillus anthracis spores to several news media offices and to two U.S. Senators through mailed letters or packages sickened 22 (11 inhalation and 11 skin cases) and caused death in five of the inhalation cases. The number of "worried well" was in the millions and caused significant disruptions to the economy. The crime remains unsolved.

• In December 2002, six terrorist suspects were apprehended in Manchester, England; their apartment was being used as a "ricin laboratory." One of the suspects was a 27 year-old chemist who was producing the dangerous toxin. On January 5, 2003, British police found traces of ricin in two residences during raids, leading to an investigation of a possible Chechen separatist plan to attack the Russian embassy with the toxin. On February 3, 2004, three U.S. Senate offices were closed after ricin was found in the mailroom that serves Senate Majority Leader Bill Frist's office. No injuries were reported.[32]

Role and Responsibility of Public Health

Public health professionals must assume responsibility for community health in both disaster preparedness and response. Just as traditional first-responders consider all emergencies, no matter their scope or scale, as "local" events, local public health authorities have the primary responsibility for the health of a community following a disaster. This is evidenced both in legal authority and in practice, where state and federal resources are often spread thin or unavailable. In preparedness activities, public health professionals must work as part of multi-agency teams, some members of which have little or no knowledge of public health. Furthermore, public health practitioners must work with "multiple bureaucratic layers of infrastructure in a condensed time frame and interact with personnel with whom they normally do not have contact and whose lexicon and methods may be different."[33] Since the public safety, emergency medical, and emergency management sectors already train and drill together, and often work under Unified Command, public health has had to be integrated into this established response structure based on the Incident Command System (ICS). There is further discussion of ICS, and this integration of public health and emergency management, in Chapter 2.

Preparedness for terrorist-caused outbreaks and injuries is an essential component of the U.S. public health surveillance and response system, which is designed to protect the population against significant public health events. The epidemiologic skills, surveillance methods, diagnostic techniques, and physical resources required to detect and investigate unusual or unknown diseases, as well as syndromes or injuries caused by chemical accidents, are similar to those needed to identify and respond to an attack with a biological or chemical agent. However, public health agencies must prepare also for the unique features a terrorist attack could have, such as mass casualties or the use of rare agents. Terrorists could also use combinations of agents, attack in more than one location simultaneously, use novel agents, or use organisms that are not on the critical list (e.g., common, drug-resistant, or genetically engineered pathogens).[34]

Responsibilities for Surveillance

In the United States, requirements for reporting diseases are mandated by state laws or regulations, and the list of reportable diseases in each state differs. In October 1990, the CDC, in collaboration with the Council of State and Territorial Epidemiologists, published a report titled Case Definitions for Public Health Surveillance (MMWR 1990;39[No. RR-13]), which provided, for the first time, uniform criteria for reporting cases. The 1990 Report was revised in 1997 to provide updated uniform criteria for state health department personnel to use when reporting notifiable diseases to CDC. The 1997 updates were published in a report titled Case Definitions for Infectious Conditions Under Public Health Surveillance (MMWR 1997;46[No. RR-10].

Public health surveillance has undergone considerable development and sophistication over the past few decades. Surveillance is defined as the ongoing, systematic collection, analysis, interpretation, and dissemination of data about a health-related event for use in public health action to reduce morbidity and mortality and to improve health (MMRW 2001;50[No. RR-13]). Surveillance serves at least eight public health functions. These include supporting case detection and public health interventions, estimating the impact of a disease or injury, portraying the natural history of a health condition, determining the distribution and spread of illness, generating hypotheses and stimulating research, evaluating prevention and control measures, facilitating planning, and outbreak detection (i.e., identifying an increase in frequency of disease above the expected occurrence of the disease).

Surveillance has three basic, interrelated component activities:

• **Data Collection** - This process can be passive in nature, whereby data are reported in such a way that the receiving agency waits for data reports to be submitted. This is seen in standard systems that report notifiable diseases to a public health department. Alternatively, the data collection practice can be active in nature, whereby data are actively sought out.

• **Analysis** - Analysis of data is a dynamic, expert and intellectual process of interpreting results to produce important information on which to base action. To carry out analysis adequately requires expertise in the subject area, skill in analytical techniques, and knowledge of the relevant public health literature.

• **Dissemination** - Proper dissemination of information to those who need to know must be timely, and requires communication skills and experience.

Rural Public Health Response In Pennsylvania

In rural Pennsylvania public health response is challenged by the fact that the state has a very thin public health workforce outside of its urban centers. Local public health authority in rural Pennsylvania rests with the state health department rather than county and municipal governments. Without staffed governmental public health agencies at the local level, and with minimal state staffing at the local level, initial public health response will fall upon first responders and hospital personnel. Should emergencies arise in which state and federal response is focused on population centers, rural personnel may be on their own for extended periods, making it critical for them to fulfill core public health response functions.

Outbreaks typically have been recognized either based on accumulated case reports of reportable diseases or by clinicians and laboratorians who alert public health officials about an unusual case or a cluster of disease. Because of the threat of terrorism and the increasing availability of electronic health data, enhancements are being made to existing surveillance systems, and new surveillance systems have been developed and implemented in public health jurisdictions with the goal of early and complete detection of outbreaks. The usefulness of surveillance systems for early detection and response to outbreaks has not been established, and substantial costs can be incurred in developing or enhancing and managing these surveillance systems and investigating false alarms. The measurement of the performance of public health surveillance systems for outbreak detection is needed to establish the relative value of different approaches and to provide information needed to improve their efficacy for detection of outbreaks at the earliest stages.

Enhanced Surveillance and Epidemiological Investigation

Enhanced, active surveillance systems often seek out data from selected, targeted groups or networks put together for specific purposes. Such groups or networks usually cover a subset of the population.

Examples of active systems include:
- Sentinel systems (sites, events, providers)
- Serial health surveys
- Database linkage

Active sentinel sites might be medical clinics, hospitals, or health centers which cover certain populations at risk. They could be networks of individual practitioners or groups such as primary healthcare physicians or emergency medical system units. Such sentinels can often provide an early assessment of occurrence in an outbreak and are most useful for diseases that occur frequently. Physician sentinels are often used for surveillance of influenza. However, in some instances, physician networks can be used to detect rare events such as acute flaccid paralysis. Sentinel events are measured occurrences that can be used to bring attention to problems in practices, procedures, or systems. For example, during fall and winter months influenza-like illness (ILI) data is often collected at clinics, hospitals, and health centers as a sentinel measure of the incidence of influenza in a community.

Other active surveillance systems include repeated or serial health surveys and chart reviews. These are usually very expensive if practiced routinely. As databases become better established and more sophisticated (disease registries, health insurance databases, etc.) it is possible to link them with surveillance systems for active surveillance purposes. Kaiser Permanente of California has established such a data gathering and analysis system across their network of hospitals and clinics.

Syndromic surveillance is among the newer tools used in enhanced disease detection. The term syndromic surveillance applies to health-related data that precede diagnosis and signal a sufficient probability of a case or an outbreak to warrant further public health response. Though syndromic surveillance has historically been utilized to target investigation of potential cases, its utility for detecting outbreaks associated with bioterrorism is increasingly being explored by public health officials.[35]

Epidemiological Clues That May Signal Bioterrorism

Public health investigators have engaged in epidemiologic investigations of disease outbreaks for centuries. Most of these outbreaks, by far, have occurred naturally. With the 2001 illnesses resulting from intentional dissemination of B. anthrasis on an unprotected, unsuspecting population, we must now include consideration of bioterrorism as a potential cause of epidemics.[36]

Naturally occurring outbreaks are relatively predictable in terms of consistency with previous occurrences, although infrequent pandemics such as influenza create a greater challenge. With an intentionally introduced biologic agent any predictability is limited.

The following is a list of clues, which may indicate that a deliberately introduced disease has occurred:

Recognizing an "Unusual Disease or Syndrome" [37]

- Out of place (e.g., Viral Hemorrhagic Fever in the U.S.)

- Out of range (e.g., sudden, unexplained illness in a young and healthy population)

- Out of context (e.g., vaccine-preventable disease in a well immunized population)

- Out of sequence (e.g., affecting only those of one age, sex, ethnic group, or those working in a common facility; human outbreak without a preceding animal outbreak)

- Out of season (e.g., influenza in late spring or summer; mosquito-borne disease in winter)

Epidemiologic Clues That May Signal a Covert Bioterrorism Attack

- Large number of ill persons with a similar disease or syndrome

- Large number of unexplained diseases, syndromes, or deaths

- Unusual illness in a population

- Higher morbidity and mortality than expected with a common disease or syndrome

- Failure of a common disease to respond to usual therapy

- Single case of disease caused by an uncommon agent

- Multiple unusual or unexplained disease entities coexisting in the same patient without other explanation

- Disease with an unusual geographic or seasonal distribution

- Multiple atypical presentations of disease agents

- Similar genetic type among agents isolated from temporally or spatially distinct sources

- Unusual, atypical, genetically engineered, or antiquated strain of agent

- Endemic disease with unexplained increase in incidences

- Simultaneous clusters of similar illness in non-contiguous areas, domestic or foreign

- Atypical aerosol, food, or water transmission

- Ill people presenting near the same time

- Deaths or illness among animals that precedes or accompanies illness or death in humans

- No illness in people not exposed to common ventilation systems, but illness among those people in proximity to the systems

Disease Surveillance in Rural Areas

In rural areas with low population density, public health surveillance is particularly challenging as the small number of cases often does not allow for adequate analysis and comparison to baseline measures. As a result, it is even more critical to count on the astute awareness and judgment of emergency first-responders and first receivers, and assure that every potential case is reported.

Health Alert Network (HAN)

The Health Alert Network (HAN) is a nationwide program conceived by the U.S. Centers for Disease Control and Prevention (CDC) to ensure that each community in the U.S. has rapid and timely access to: emergent health information; a cadre of highly-trained professional personnel; and evidence-based practices and procedures for effective public health preparedness, response, and service on a 24/7 basis.

Currently, HAN is a strong national program, providing vital health information and the infrastructure to support the dissemination of information at the state and local levels, and beyond. Most of the state-based HAN programs have over ninety percent of their population covered under the umbrella of HAN. The HAN Messaging System directly and indirectly transmits health alerts, advisories, and updates to over one million recipients. HAN links local health departments to one another and to other organizations critical for preparedness and response including but not limited to: emergency first responders, hospitals, laboratories, private practice providers, state health departments, CDC, and other federal agencies.

In Pennsylvania, the Health Alert Network (PA-HAN) is part of the Pennsylvania Department of Health's Public Health Emergency Preparedness and Response Program, and was established under a cooperative agreement with the CDC.

The PA-HAN serves as a communication network among state and local public health agencies, healthcare providers, hospitals and emergency management officials.

Information provided on the PA-HAN website is based on recommendations from the CDC and other health organizations. Emergency responders who want to find out more about or join PA-HAN should contact their local public health agency or the state health department.

Laboratory Response Network (LRN)

Most local health departments and response agencies depend on state health department laboratories to provide microbiological testing for recognizing, tracking, and controlling outbreaks of infectious disease.[38] Laboratories are an important component of surveillance systems. For example, if a laboratory received a request to test a sample for anthrax or plague bacteria or another agent known to be a potential biological weapon, it should automatically notify the communicable disease control office of its health department.

The Laboratory Response Network (LRN) was established by the Department of Health and Human Services (DHHS) through the Centers for Disease Control and Prevention (CDC) in accordance with Presidential Decision Directive 39 (PDD-39), which outlined national anti-terrorism policies and assigned specific missions to federal departments and agencies.

Through a collaborative effort involving LRN founding partners, the Federal Bureau of Investigation (FBI) and the Association of Public Health Laboratories (APHL), the LRN became operational in August 1999. Its objective was to ensure an effective laboratory response to bioterrorism by helping to improve the nation's public health laboratory infrastructure, which had limited ability to detect or respond to bioterrorism agents or threats.

Today, the LRN is charged with the task of maintaining an integrated network of state and local public health, federal, military, and international laboratories that can respond to bioterrorism, chemical terrorism, and other public health emergencies. The LRN is a unique asset in the nation's growing preparedness for biological and chemical terrorism.
The linking of state and local public health laboratories with veterinary, agriculture, military, and water and food-testing laboratories is unprecedented.

The LRN for public health emergencies, including biological terrorism is divided into three categories: National, Reference, and Sentinel Laboratories. National laboratories (Level D), including those operated by CDC, are responsible for specialized strain characterizations, bioforensics, select agent activity, and handling of highly-infectious biological agents.

Reference laboratories (Level B, C) are responsible for investigation and/or referral of specimens. They are made up of more than 100 state and local public health, military, international, veterinary, agriculture, food, and water testing laboratories. In addition to laboratories located in the United States, facilities located in Australia, Canada, and the United Kingdom serve as reference laboratories abroad. The Pennsylvania Department of Health lab in Lionville is a Level B lab; a second lab is planned for Western Pennsylvania.

Sentinel laboratories (Level A) refer to hospital-based, clinical institution, and commercial diagnostic laboratories. The LRN is currently working with the American Society for Microbiology and state public health laboratory directors to ensure that private and commercial laboratories are part of the LRN. There are an estimated 25,000 private and commercial laboratories in the United States. Sentinel laboratories play a key role in the early detection of biological agents. Sentinel laboratories provide routine diagnostic services, rule-out, and referral steps in the identification process. While these laboratories may not be equipped to perform the same tests as LRN reference laboratories, they can test samples.

FIGURE 1.

Biological Testing Laboratories in the Laboratory Response Network (LRN) by Level and Biologic Safety Level (BSL)

Level D Lab — BSL-4

Level C Lab BSL-3

Level B Lab BSL-2 Facility + BSL-3 Safety Practices

Level A Lab Uses Class II Biosafety Cabinet

D. Highest level characterization (Federal)

C. Molecular assays, reference capacity

B. Limited confirmation and transport

A. Rule-out and forward organisms
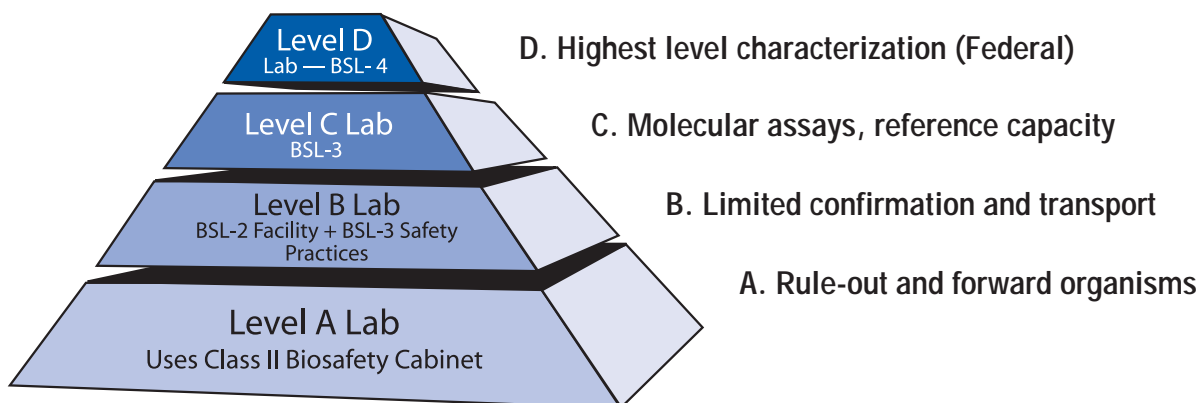
RODS Laboratory

In Pennsylvania Real-time Outbreak and Disease Surveillance (RODS) is used by 118 healthcare facilities. RODS is an open-source public health surveillance software system that collects and analyzes disease surveillance data in real time. RODS has been in development since 1999 by the RODS Laboratory - a collaboration of the University of Pittsburgh and Carnegie Mellon University.

The RODS Laboratory has also developed the National Retail Data Monitor (NRDM), which monitors sales of over-the-counter (OTC) healthcare products to identify disease outbreaks as early as possible. In operation since December 2002, there are nearly 20,000 retail pharmacy, grocery, and mass merchandise stores that participate in NRDM.

More information about the RODS Laboratory can be found at: **http://www.rods.health.pitt.edu/**

Department of Health Bureau of Laboratories

The Pennsylvania Department of Health, through its Bureau of Laboratories, operates the State Health Laboratory that maintains a state of readiness to support the investigation of disease outbreaks or threats to the public health. It is located near Philadelphia and performs approximately 180,000 tests each year for approximately 100 different diseases. The Department of Health State Health Laboratory is the designated primary laboratory for the detection and identification of bioterrorism agents. It has developed high security, high containment facilities for the investigation of water, food and environmental outbreaks and bioterrorist events, interfacing with health agencies and law enforcement including the FBI. The bureau establishes and monitors the performance standards for 7,100 clinical and physician-office laboratories in the Commonwealth, provides technical assistance and reference services to other labs, and recommends certification of clinical laboratories under the requirements of the Federal Clinical Laboratory Improvement Amendment (CLIA).

From PA Department of Health: **http://www.health.state.pa.us**

ROLE OF EMERGENCY RESPONDERS IN REPORTING PUBLIC HEALTH EMERGENCIES

Reporting of Disease Outbreaks

The surveillance system depends upon the cooperation and timely notification of health authorities concerning unusual disease occurrence or suspected disease within the community. Obligation to report falls upon many groups, including physicians, school and infection control nurses, laboratorians, veterinarians, pharmacists, coroners, poison control centers, etc., and of course, all emergency medical services professionals and other first responders.

Unusual disease occurrences must be promptly reported to appropriate state and local health authorities, consistent with existing public health notification procedures. Health authorities, in turn, notify law enforcement agencies and their respective county Emergency Operations Center (EOC) of suspicious disease outbreaks suspicious for bioterrorism. Conversely, law enforcement agencies responding to a possible act of terrorism, intentional sabotage of drinking water or food supplies, or release of a hazardous chemical should promptly notify health officials and their jurisdiction's EOC. Health and public safety officials then coordinate response activities through the appropriate county EOC or, when more than one county is affected, through the Pennsylvania Emergency Management Agency (PEMA).

Notification of Health Authorities

The Health Insurance Portability and Accountability Act (HIPAA) allows for public health information to be disclosed to a public health authority authorized by law to collect such information for the purpose of controlling disease, injury or disability. These purposes include public health surveillance, investigations and interventions (45 CFR 164.512(b)(i)). If an epidemiological investigation is warranted, emergency responders should contact the appropriate local public health authority/agency, keep lines of communication open between hospitals, laboratories, and public health officials, provide access to medical records or information accumulated on patients in their care, and leave the detective work to law enforcement and public health experts.

The Pennsylvania Department of Health and/or city and county health departments are the appropriate contact points for reporting unusual human or animal disease, pharmaceutical use, absenteeism, or suspicious activities that threaten public health. The emergency numbers are:
- Pennsylvania Department of Health: **1-877-PA HEALTH (1-877-724-3258)** – 24 hours
- Nearest City or County Health Department:*
  Agency Name _____ Phone Number ____- _____ - _____

Because healthcare providers also call the CDC about unusual situations, a pathway from CDC to health departments has been established, to assure that the information loop is closed. If state or local health authorities cannot be reached, call the **CDC Emergency Operations Center at 1-404-488-7100**. Activation of Metropolitan Medical Response System (MMRS) resources, and notification of state and local health authorities, will then be initiated by CDC as appropriate.

Notification of County Emergency Operations Centers (EOCs)

Emergency responders should also notify public safety and emergency management officials of suspicious or unusual disease occurrence through their respective Emergency Dispatch and/or County EOC.

If the nature of the emergency warrants, the County EOC can be accessed by calling 9-1-1
County EOC _____ Phone Number _____ - _____ - _____

*Areas that fall outside of the jurisdiction of an Independent Health Department are the jurisdictional responsibility of the Pennsylvania Department of Health. Primary notification should be to PADOH.

HOW TO RECOGNIZE AND HANDLE A SUSPICIOUS PACKAGE OR ENVELOPE

In September and October 2001, letters containing Bacillus anthracis (anthrax) were sent through the mail in several areas in the United States. Although there have been no known recent mail-related anthrax exposures, all persons should continue to take appropriate steps to protect themselves and others from exposure to Bacillus anthracis by following these guidelines for recognizing and handling suspicious packages.

Identifying Suspicious Packages and Envelopes

Some characteristics of suspicious packages and envelopes include the following:

1. **Inappropriate or unusual labeling**
   - Excessive postage
   - Handwritten or poorly-typed addresses
   - Misspellings of common words
   - Strange return address or no return address
   - Incorrect titles or title without a name
   - Not addressed to a specific person
   - Marked with restrictions, such as "Personal," "Confidential," or "Do not x-ray"
   - Marked with any threatening language
   - Postmarked from a city or state that does not match the return address

2. **Appearance**
   - Powdery substance felt through or appearing on the package or envelope
   - Oily stains, discolorations, or odor
   - Lopsided or uneven envelope
   - Excessive packaging material such as masking tape, string, etc.

3. **Other suspicious signs**
   - Excessive weight
   - Ticking sound
   - Protruding wires

Handling of Suspicious Packages or Envelopes

- Do not shake or empty the contents of any suspicious package or envelope.
- Do not carry the package or envelope, show it to others or allow others to examine it.
- Put the package or envelope down on a stable surface; do not sniff, touch, taste, or look closely at it or any contents which may have spilled.
- Alert others in the area about the suspicious package or envelope. Leave the area, close any doors, and take actions to prevent others from entering the area. If possible, shut off the ventilation system.
- WASH hands with soap and water to prevent spreading potentially infectious material to face or skin. Seek additional instructions for exposed or potentially exposed persons.
- If at work notify a supervisor, a security officer, or a law enforcement official.
- If at home contact the local law enforcement agency.
- If possible, create a list of persons who were in the room or area when this suspicious letter or package was recognized and a list of persons who also may have handled this package or letter. Give this list to both the local public health authorities and law enforcement officials.

Adapted from: CDC. (2003). *Anthrax: how to recognize and handle a suspicious package or envelope.* U.S. Department of Health and Human Services. Available online: http://www.bt.cdc.gov/agent/anthrax/mail/pdf/suspiciouspackages.pdf

Chapter 1: Post-Test

1. Name at least two disasters in Pennsylvania history
   a.
   b.

2. Which of the following can be the target of bioterrorism?
   a. Humans
   b. Animals
   c. Plants
   d. All of the above

3. Which of the following is not a basic component of public health surveillance?
   a. Data collection
   b. Analysis
   c. Treatment
   d. Dissemination of information

4. The "integrated network of state and local public health, federal, military, and international laboratories that can respond to bioterrorism, chemical terrorism and other public health emergencies" is known as the:
   a. Integrated Laboratory Network (ILN)
   b. Laboratory Response Network (LRN)
   c. Epidemiology Intelligence Service (EIS)

Additional Resources: Chapter 1

Mass Fatality Management
Centers for Disease Control and Prevention (CDC) (2005).
Interim Health Recommendations for Workers Who Handle Human Remains
http://www.bt.cdc.gov/disasters/tsunamis/handleremains.asp

U.S. Department of Homeland Security (2005). *What Is a Disaster Mortuary Operational Response Team (DMORT)?*
http://www.oep-ndms.dhhs.gov/dmort.html

Non-Government Agencies
University of Pittsburgh Graduate School of Public Health Center for Public Health Practice. (2005)
http://www.cphp.pitt.edu/
  • Information on programs, resources and events from the center

Public Health
Centers for Disease Control and Prevention (CDC). *National Public Health Performance Standards Program.*
The Essential Public Health Services
http://www.cdc.gov/od/ocphp/nphpsp/EssentialPHServices.html

Public Health Foundation. *Public Health Infrastructure Resource Center*
http://www.phf.org/infrastructure/index.php
  • This site is designed to foster understanding of the people, systems, and organizations that make up the public health infrastructure at the local, state and national level, with a goal of building public health capacity at all levels.

Additional Resources: Chapter 1 (cont'd)

Public Health Emergencies
Centers for Disease Control and Prevention (CDC). *Information About Influenza Pandemics*
http://www.cdc.gov/flu/avian/gen-info/pandemics.html

Centers for Disease Control and Prevention (CDC) (2005). *Emergency Preparedness and Response*
http://www.bt.cdc.gov

Noji, E. K. (2005). *Public Health Disaster Consequences of Disasters*
http://www.pitt.edu/~super1/lecture/lec20351/index.html

Public Health Emergencies—Detection and Reporting
Centers for Disease Control and Prevention (CDC) (2005). *Emergency Preparedness and Response: Surveillance*
http://www.bt.cdc.gov/episurv/#systems

Treadwell, T., D. Koo, et al. (2003). "Epidemiologic Clues to Bioterrorism." *Public Health Reports 118* (March-April 2003): 92-98.

   • Gives an overview of possible clues for differentiating biological or chemical terrorism events from non-terrorism events.

Public Health Emergencies—Environmental Health
Centers for Disease Control and Prevention (CDC). National Center for Environmental Health (2005). *Emergency and Terrorism Preparedness for Environmental Health Practitioners*
http://www.cdc.gov/nceh/ehs/ETP/default.html

   • This Web site serves as a clearinghouse of information resources related to emergency and terrorism preparedness for environmental health practitioners. It includes links to government websites and other sources on topics of food and water security, exposures to hazardous chemicals, building environments, radiation, vectors, biologic and infectious wastes, and terrorism threats.

Public Health Emergencies—History
Department of Health and Human Services. National Vaccine Program Office (2004)
http://www.hhs.gov/nvpo/pandemics/flu3.html

PBS/WGBH (1999). Influenza 1918. *American Experience Online*
http://www.pbs.org/wgbh/amex/influenza/index.html

   • Materials associated with the PBS television film on the 1918 pandemic, including photographs, interviews, a timeline of events, and maps.

Snacken, R., A. P. Kendal, et al. (1999) The Next Influenza Pandemic: Lessons from Hong Kong, 1997. *Emerging Infectious Diseases* 1999 Mar-Apr;5(2):195-203.
http://www.cdc.gov/ncidod/eid/vol5no2/snacken.html

University of Minnesota. Center for Infectious Disease and Research Policy - Pandemic Flu.
http://www.cidrap.umn.edu/cidrap/content/influenza/panflu/biofacts/panflu.html

Public Health Emergencies—Response
Agency for Healthcare Research and Quality (AHRQ) (2004).
Community-Based Mass Prophylaxis: A Planning Guide for Public Health Preparedness
http://www.ahrq.gov/research/cbmprophyl/cbmpro.html

Prior, S. D. (2004). *Who You Gonna Call? Responding to a Medical Emergency with the Strategic National Stockpile*
http://www.ndu.edu/ctnsp/SNS-wb-kd-wb-kd.pdf

References: Chapter 1

1 Institute of Medicine, Committee for the Study of the Future of Public Health, Division of Healthcare Services. 1988. *The Future of Public Health.* National Academy Press, Washington, DC

2 Association of Schools of Public Health (ASPH). (2005). *What is public health?* Available online: http://www.asph.org/

3 Landesman, L.Y. (2001). *Public Health Management of Disasters: The Practice Guide.* Washington DC: American Public Health Association.

4 USGS. *Earthquake Hazards Program: Michoacan, Mexico 1985 September 19 13:17:47 UTC Magnitude 8.0.* Available online: http://www.neic.usgs.gov/neis/eq_depot/world/1985_09_19.html

5 State of California. *California Geological Survey – Northridge Earthquake 10 Year Anniversary.* Available online: http://www.consrv.ca.gov/CGS/geologic_hazards/earthquakes/northridge.html

6 Sommer, A., Mosley, W.H. (1972). East Bengal Cyclone of November, 1970: Epidemiological approach to disaster assessment. *The Lancet* 1(7759): 1029-36.

7 Australian Government, Bureau of Meteorology Research Center. *Global Guide to Tropical Cyclone Forecasting: Tropical Cyclone Records.* Available online: http://www.bom.gov.au/bmrc/pubs/tcguide/ch9/ch9_8.html

8 Public Health Agency of Canada (PHAC). *Adverse health events associated with the 1998 ice storm: Report of hospital surveillance of the eastern Ontario health unit region.* Available online: http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/99vol25/dr2517ea.html

9 McCullough, D. (1987). The Johnstown Flood. In Oxford Companion to United States History, Paul S. Boyer, Ed. New York: Oxford University Press, 2001; and http://www.en.wikipedia.org/wiki/Johnstown_Flood

10 '85 Tornado death toll down. (1986, February 2). *New York Times,* p. 29.

11 The deadliest tsunami. (2005). *Britannica Book of the Year, 2005.* Available online: http://www.search.eb.com/eb/article-9400051

12 Bhopal. (2005). T*he Columbia Electronic Encyclopedia, 6th ed.* Available online: http://www.infoplease.com/ce6/world/A0807434.html

13 Combs, C. C., Slann, M. (2002). Anthrax, as a biological weapon. *Encyclopedia of Terrorism.* New York, Facts of File.

14 Combs, C. C., Slann, M. (2002). Japan, attack in Tokyo subway. *Encyclopedia of Terrorism.* New York, Facts of File.

15 Accidents spur new focus on securing U.S. rail system. (2005, January 29). *The Washington Post*, p. A05.

16 Oklahoma City bombing. (2005). *Encyclopedia Britannica.* Available online: http://www.search.eb.com/eb/article-9343572

17 Combs, C. C., Slann, M. (2002). Attack on America: September 11, 2001. *Encyclopedia of Terrorism.* New York, Facts of File.

18 World War II. (2005). *Encyclopedia Britannica.* Available online: http://www.search.eb.com/eb/article-210470

19 Three Mile Island nuclear reactor. (2003). *Environmental encyclopedia [electronic resource],* Marci Bortman, et al., eds.

20 Chernobyl. (2005). *The Columbia Electronic Encyclopedia, 6th ed.* Available online: http://www.infoplease.com/ce6/world/A0811693

21 Bubonic plague. (2005). *Britannica Student Encyclopedia.* Available online: http://www.search.eb.com/eb/article-9273382

22 Smallpox. (2005). *Britannica Student Encyclopedia.* Available online: http://www.search.eb.com/eb/article-9313580

23 Influenza epidemic of 1918-19. (2005). *Britannica Student Encyclopedia.* Available online: http://www.search.eb.com/eb/article-9002537

References: Chapter 1 (cont'd)

24 National Advisory Committee on SARS and Public Health. *Learning from SARS: Renewal of Public Health In Canada.* October 2003. http://www.phac-aspc.gc.ca/publicat/sars-sras/pdf/sars-e.pdf

25 PA Homeland Security. (2004). *Disaster Preparation*. Available online: http://www.homelandsecurity.state.pa.us/homelandsecurity

26 Landesman, L.Y. (2001). *Public Health Management of Disasters: The Practice Guide.* Washington DC: American Public Health Association.

27 CDC (2001). Update: Investigation of Bioterrorism- Related Anthrax and Adverse Events from Antimicrobial Prophylaxis. *MMWR 50 (44).*

28 CDC. (2000). Biological and chemical terrorism: strategic plan for preparedness and response. Recommendations of the CDC Strategic Planning Workgroup. *MMWR 49(RR-4).*

29 Botulism poisoning is also associated with home canning of vegetables such as corn and beans.

30 Tularemia is often associated with rabbits. It is found in rabbits and many other small mammals in North America. Infection can occur when broken skin (cuts, abrasions) comes in contact with an infected *Sylvilagus* or "Cottontail" rabbit carcass.

31 Eitzen EM, Takafuji ET: Historical Overview of Biological Warfare. In T*extbook of Military Medicine, Medical Aspects of Chemical and Biological Warfare,* 1997. Published by the Office of The Surgeon General, Department of the Army, USA. Pages 415-424.

32 Mirarchi F.L., Allswede, M. (2005). CBRNE – Ricin. *eMEdicine.* Available online: http://www.emedicine.com/emerg/topic889.html

33 Landesman, L.Y. (2001). *Public Health Management of Disasters: The Practice Guide.* Washington DC: American Public Health Association.

34 CDC. (2000). Biological and chemical terrorism: strategic plan for preparedness and response. Recommendations of the CDC Strategic Planning Workgroup. *MMWR 49(RR-4).*

35 CDC. (2005). *Syndromic Surveillance: an Applied Approach to Outbreak Detection.* Available online: http://www.cdc.gov/epo/dphsi/syndromic.htm

36 Treadwell, T.A., Koo, D., Kuker, K., Khan, A.S. (March-April 2003). Epidemiologic clues to bioterrorism. *Public Health Reports;* 118.

37 Piposzar, J.D. (May 2005); Adapted from: US DHSS, CDC (July 2001). *The Public Health Response to Biological and Chemical Terrorism: Interim Planning Guidance for State Public Health Officials.*

38 Keck, C.W., Erme, M.A. (2003). Strengthening the public health system. In *Terrorism and Public Health: A Balanced Approach to Strengthening Systems and Protecting People.* (Levy, B.S., Sidel, V.W., Eds.). New York: Oxford University Press.

Public Health and Emergency Management   chapter 2

Chapter 2: Pre-Test

1. The Centers for Disease Control and Prevention (CDC), is a federal agency within the:
   - a. U.S. Department of Homeland Security (DHS)
   - b. U.S. Department of Health and Human Services (DHHS)
   - c. U.S. Food and Drug Administration (FDA)

2. The federal government's plan of action when assisting affected states and local jurisdictions in the event of a severe disaster is called the:
   - a. Incident Command System (ICS)
   - b. Emergency Operations Center (EOC)
   - c. National Response Plan (NRP)

3. How many Regional Counter-terrorism Task Forces are there in Pennsylvania?
   - a. 1
   - b. 9
   - c. 21
   - d. 50

Response to a large-scale public health emergency will require unprecedented collective action and decision-making as part of a multi-disciplined, multi-sector response. Planning for public health emergencies requires input from the entire community and all levels of government organization.

Incident Command System (ICS) organization has been mandated by the U.S. Government as part of the National Incident Management Systems in the National Response Plan. This system should be utilized by all private agencies and organizations, as well as the federal government and local, county, and state governments. This chapter introduces this framework within the context of public health emergency management and response.

U.S. Department of Health & Human Services (DHHS)

The U.S Department of Health & Human Services (DHHS) is the federal government's principal agency for protecting the health of all Americans and providing essential human services, especially for those who are least able to help themselves. DHHS works closely with state and local governments, and many DHHS-funded services are provided at the local level by state or county agencies, or through private sector grantees. The DHHS's programs are administered by 11 operating divisions, including eight agencies in the U.S. Public Health Service and three human services agencies. Two of these operating divisions, the Centers for Disease Control and Prevention (CDC) and the Health Resources Services Administration (HRSA), have active roles in the funding and coordination of state and local public health emergency preparedness planning and response.

Centers for Disease Control and Prevention (CDC)

Working with states and other partners, the CDC provides a system of health surveillance to monitor and prevent disease outbreaks (including bioterrorism), implement disease prevention strategies, and maintain national health statistics. CDC also provides for immunization services, workplace safety, and environmental disease prevention. The Bioterrorism Preparedness and Response Planning (BPRP) Branch coordinates funding and guidance to local and state governments with regard to public health preparedness planning and response.

CDC provides a wide variety of coordination and support roles in response to public health threats and emergencies. For detailed information, visit: http://www.bt.cdc.gov/

Health Resources and Services Administration (HRSA)

HRSA provides access to essential healthcare services for people who are low-income, uninsured or who live in rural areas or urban neighborhoods where healthcare is scarce. The agency also helps prepare the nation's healthcare system and providers to respond to bioterrorism and other public health emergencies, maintains the National Health Service Corps and helps build the healthcare workforce through training and education programs.

Healthcare system preparedness and related workforce training and education activities are funded and coordinated by the National Hospital Bioterrorism Preparedness Program (NBHPP) through cooperative agreements and grants to states, localities, and private-sector partners.

For more detail on HRSA programs that prepare hospitals and supporting healthcare systems to deliver coordinated and effective care to victims of terrorism and other public health emergencies visit: http://www.hrsa.gov/bioterrorism/

U.S. Department of Homeland Security (DHS)

The DHS Office of Domestic Preparedness (ODP) is responsible for preparing the United States for acts of terrorism. In carrying out its mission, ODP is the primary office responsible for providing training, funds for the purchase of equipment, support for the planning and execution of exercises, technical assistance and other support to assist states and local jurisdictions to prevent, plan for, and respond to acts of terrorism. In the event of a terrorist attack, natural disaster or other large-scale emergency, the U.S. Department of Homeland Security (DHS) assumes primary responsibility for ensuring that emergency response professionals are prepared. This entails providing a coordinated, comprehensive federal response to any large-scale crisis and mounting a swift and effective recovery effort. Agencies within DHS include: the Transportation Security Administration (TSA), Customs and Border Protection, Immigration and Customs Enforcement, the Federal Emergency Management Agency (FEMA), the Homeland Security Operations Center (HSOC), the U.S. Coast Guard (USCG), the U.S. Secret Service (USSS), and others. Within this vast new Federal department, the primary agency responsible for emergency preparedness and response remains FEMA.

Federal Emergency Management Agency (FEMA)
In national disasters, FEMA is the lead agency coordinating the operation of the National Response Plan (see below). FEMA performs many of the same functions as a local emergency management agency but can also directly utilize federal resources and money in preparation for, response to, and recovery from larger emergencies and disasters.

Key Pennsylvania Response Agencies

Pennsylvania Office of Homeland Security
The Office of Homeland Security is responsible for coordinating the state's homeland security efforts with state agencies, counties and local municipalities. The director of the office serves as liaison to the first responder community and emergency management, working closely with the Regional Counter-Terrorism Task Forces and coordinating Homeland Security training efforts within the Commonwealth.

Pennsylvania Emergency Management Agency (PEMA)
PEMA is an executive agency reporting directly to the governor of the commonwealth. PEMA's mission is to coordinate state agency response, including the Office of the State Fire Commissioner and Office of Homeland Security, to support county and local governments in the areas of civil defense, disaster mitigation and preparedness, planning, and response to and recovery from man-made or natural disasters. PEMA's prime responsibility is to support county emergency managers and their organizations, county agencies, and in turn, to support boroughs, cities, and townships.

Pennsylvania Emergency Management Council (PEMC)
The Pennsylvania Emergency Management Council establishes policy and direction for the statewide emergency management program. The council membership includes the governor, the lieutenant governor, the secretaries of the various state departments with emergency response and recovery capabilities, the leadership of the General Assembly, and representatives of county and municipal government associations, labor, business and industry, and the private sector. The council meets at least three times a year and within 72 hours after the governor declares a disaster emergency. In addition, the council reviews and approves certain actions required under laws such as the Radiation Protection Act. Under that Act the council approves annual programs of work and spending plans for counties in emergency planning zones by the nine nuclear power generating stations affecting the Commonwealth.

The council also acts as the State Emergency Response Commission (SERC) which oversees the various hazardous materials emergency preparedness and response requirements contained in the federal Superfund Amendments and Reauthorization Act of 1986 (SARA Title III).

Pennsylvania Department of Health (PADOH)
The Pennsylvania Department of Health (PADOH) has the duty and power to protect the health of residents in the Commonwealth of Pennsylvania. It has authority to enforce all statutes pertaining to public health for the prevention and suppression of disease and injury. PADOH also works closely with local public health agencies in cities, counties and municipalities.

PADOH was created by the Act of April 27, 1905, P.L. 312, and subsequently modified through the Administrative Code of 1929. PADOH's mission is to promote healthy lifestyles, prevent injury and disease, and to assure the safe delivery of quality healthcare for all commonwealth citizens. PADOH is responsible for planning and coordinating health resources throughout the commonwealth. It licenses and regulates a variety of health facilities such as hospitals, nursing homes, ambulatory

Pennsylvania's Public Health Infrastructure

In addition to the Pennsylvania Department of Health, the Commonwealth has 10 county and municipal health departments (also known as Act 315 health departments). These 10 agencies, all located in urban areas, comprise most of Pennsylvania's local public health infrastructure. Remaining counties, cities, and towns are served by PADOH through six regional district offices and 57 county health centers (which often have no more than 1 or 2 public health staff). In addition, Pennsylvania statute mandates that municipalities of a certain size and class must employ Local Health Officers. Unfortunately, many of these positions are unoccupied, uncertified, and/or part-time. In 2000, a Health Resources and Services Administration-sponsored national report by Dr. Kristine Gebbie, entitled *"The Public Health Workforce: Enumeration 2000,"* noted that Pennsylvania had the lowest ratio of public health workers to population in the nation – 37 per 100,000, with the national average 158 per 100,000. Considering that the majority of these workers are employed in Act 315 health departments or the state health department in Harrisburg, the ratio of workers to population in rural areas in undoubtedly far less. To overcome this challenge and fulfill its mission, PADOH works with a broad array of partners at the local level, including hospitals, human service agencies, first responder and emergency management agencies, and others.

Questions to Consider:
Who are PADOH's community level preparedness partners? What role do you fill? How can you help PADOH to assure adequate public health response?

surgical facilities and other in-patient and out-patient facilities. In addition, PADOH supports outreach, education, prevention and treatment services across a variety of program areas. Grants and subsidies to community-based groups are used to provide essential services to Commonwealth residents including programs for women and children, nutrition, immunization, diagnosis and treatment of certain blood and communicable diseases, cancer control and prevention, and the prevention and treatment of substance abuse.

The PADOH Office of Public Health Preparedness coordinates and supports efforts to prepare for, protect against, respond to, and recover from all acts of bioterrorism and other public health emergencies that affect the civilian population. The offices serves as the focal point within DOH for these activities, advises the secretary on preparedness issues and serves as liaison with the Office of Homeland Security and PEMA.

Regional EMS Councils

The Pennsylvania Department of Health is the lead agency for emergency medical services (EMS) in the Commonwealth. PADOH's Emergency Medical Services Office is responsible for the statewide development and coordination of a comprehensive system to prevent and reduce premature death and disability.

Pennsylvania's EMS system is defined by Act 45 of 1985, Pa C.S. §6921—6938, new regulations published October 14, 2000, and the Statewide EMS Development Plan. The Commonwealth's EMS system includes 16 regional EMS councils, the Pennsylvania Emergency Health Services Council (PEHSC; whose board of directors is recognized as the official statewide EMS advisory body), and the

PA Trauma Systems Foundation. The 16 regional EMS Councils manage geographically delineated areas of Pennsylvania pursuant to the EMS statute and regulations, the input of their communities and other stakeholders and the leadership of the EMS Office. Approximately 50,000 EMS personnel and over 1,000 licensed ground and air ambulance services respond to over one million patients each year in Pennsylvania's EMS delivery system.

Regional Counterterrorism Task Forces

Under Pennsylvania's 2002 Counterterrorism Planning, Preparedness and Response Act, nine Regional Counterterrorism Task Forces were established across the Commonwealth. Each is composed of federal, state, county and municipal emergency management, health, law enforcement, public safety and other officials and representatives from volunteer service organizations, private business and industry, hospitals and medical care facilities. They are organized by a board of County Emergency Management Directors within a multi-county area and are responsible for conducting counterterrorism planning, training preparedness and response activities. Each Task Force conducts joint planning, training, exercising, and personnel and equipment resource sharing.

Within each Regional Counterterrorism Task Force, there are Specialized Incident Support Teams. These teams include a complement of individuals established by the Regional Counterterrorism Task Force and organized in accordance with standards developed by PEMA and applicable Federal agencies to respond to emergencies involving an actual or potential natural or man-made disaster. Such teams include disaster medical assistance teams (DMAT) and disaster mortuary response teams (DMORT), described in detail in the next chapter.

FIGURE 2.
Pennsylvania Department of Health Regions
(Also shows County and Municipal Health Departments)
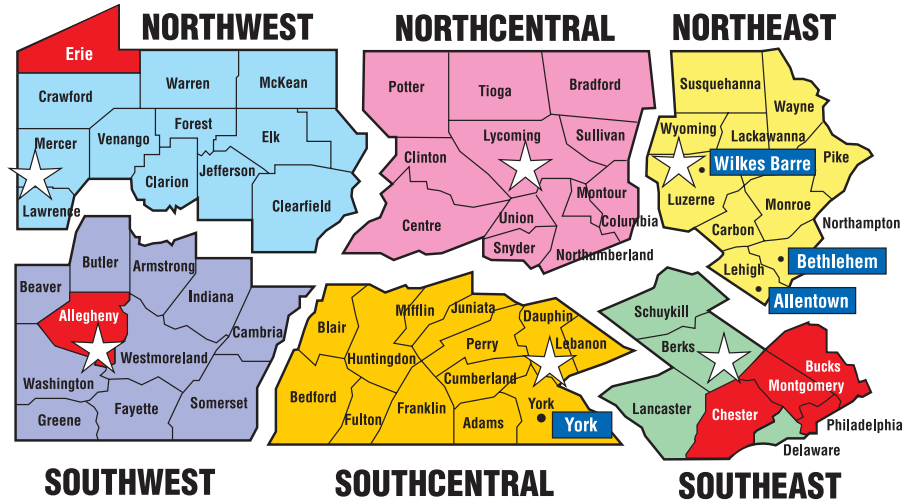
FIGURE 3. Regional EMS Councils
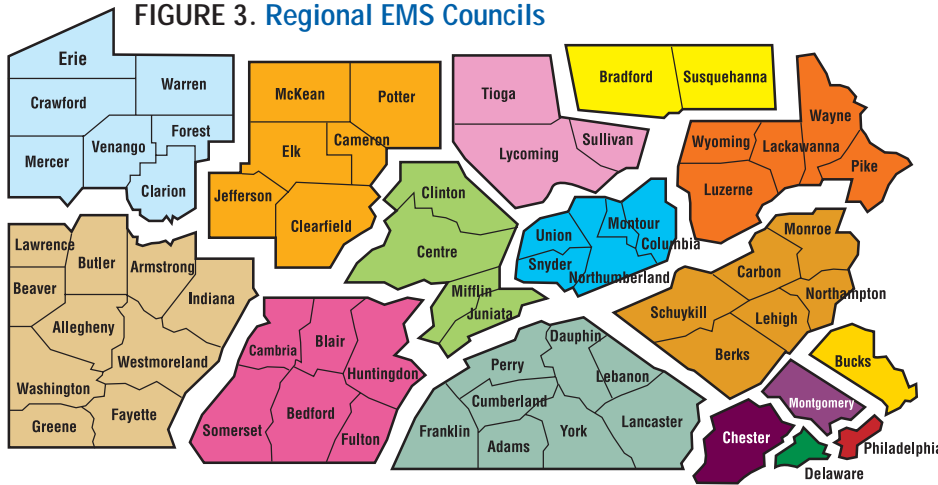
EMS Council Legend
BSEMS
Chester
Delaware
Eastern
EHSF
EMSI
EMS of NE PA
EMMCO East
EMMCO West
LTS
Montgomery
Philadelphia
S. Alleghenies EMS
Seven Mountains EMS
Susquehanna

FIGURE 4. Emergency Response Groups and Counterterrorism Task Force by Region
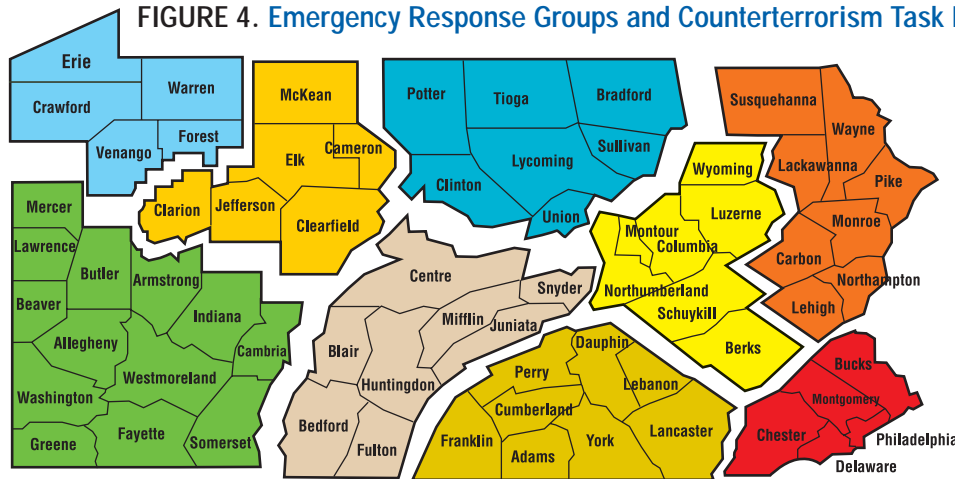
ERG - Emergency Response Group
CTTF - Counter-Terrorism Task Force

Northwestern PA ERG
Northwest Central ERG
North Central CTTF
Northeast PA ERG
East Central PA CTTF
Southwestern PA ERG
South Central Mountain CTTF
South Central PA CTTF
Southeast PA ERG

Questions to consider:
Looking at the maps above, how many different regions does your county fall within?
What are the implications for regional response?

TABLE 1
Emergency Preparedness and Disaster Response Agencies by Jurisdictional Level, Pennsylvania and U.S.
(Sample listing of response agencies—not intended to be all-inclusive)

	LOCAL	STATE	FEDERAL
Government – Executive Branch	• City/Township/ Borough Councils • County Commissioners	Office of the Governor	White House
Emergency Management	• County Emergency Management Agencies • Municipal Emergency Management	• Pennsylvania Emergency Management Agency (PEMA) • Pennsylvania Office of Homeland Security	Federal Emergency Management Agency (FEMA)
Public Health	• County & Municipal Health Departments • Local Health Officers • PADOH District Offices/ County Health Centers	• Pennsylvania Department of Health (PADOH)	Centers for Disease Control & Prevention (CDC)
Laboratory	"Sentinel" Labs - Hospital - Clinic	• PADOH Public Health Lab • Pennsylvania Agricultural & Veterinary Lab	Centers for Disease Control & Prevention (CDC)
Medical	• Medical Reserve Corps • Metropolitan Medical Response System (MMRS) • EMS Services • EMS Surge Teams • Hospitals & Other Health Care Providers • Clinicians & Practices	• Pennsylvania Department of Health (PADOH)	National Disaster Medical System (NDMS) - DMAT
Law Enforcement	• Municipal Police Departments • Sheriffs' Depts/County Police • Other Recognized Police Agencies (e.g., Campus Police, Transit Police, Housing Authority Police, etc.)	• Pennsylvania State Police - Bureau of Criminal Investigation • Pennsylvania Office of the Attorney General	• Federal Bureau of Investigation (FBI) • U.S. Attorney General's Office • Bureau of Alcohol, Tobacco & Firearms • U.S. Postal Inspectors
Military/ Armed Forces		• Pennsylvania National Guard	U.S. Military
Agriculture/ Veterinary	• County Cooperative Extension Offices • Pennsylvania County Animal Response Teams (CART)	• Pennsylvania Department of Agriculture • Pennsylvania State Animal Response Teams (SART)	U.S. Department of Agriculture
Environmental Health and Protection	• County & Municipal Health Departments • Pennsylvania Department of Environmental Protection (DEP) Regional Offices • Local/County HAZMAT Teams	• PA Dept. of Environmental Protection (DEP)	U.S. Environmental Protection Agency (EPA)
Occupational Health		• Pennsylvania Department of Labor and Industry	• Occupational Safety & Health Admin. (OSHA) • CDC National Institute for Occupational Safety & Health (NIOSH)

National Response Plan (NRP)

Under the authorities of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 et seq., the National Response Plan (NRP) is designed to address the consequences of any disaster or emergency situation in which there is need for federal assistance. The NRP is also the federal government's plan of action when assisting affected states and local jurisdictions in the event of a severe disaster. The mission of the NRP is to save lives, protect property, preserve public health, and maintain public safety. A core principal of the NRP is that the local and state jurisdiction is in charge of managing the disaster response and that the responding federal resources work in support of local groups. The NRP incorporates best practices and procedures from incident management disciplines—homeland security, emergency management, law enforcement, firefighting, public works, public health, responder and recovery worker health and safety, emergency medical services, and the private sector — and integrates them into a unified structure. It forms the basis of how the federal government coordinates with state, local, and tribal governments and the private sector during incidents. The NRP is built upon the template of the National Incident Management System, described below. The plan consists of 15 emergency support functions (ESFs).

ESFs represent the types of federal assistance most needed by states overwhelmed by the impact of a catastrophic event. The two ESFs most pertinent to responding to health emergencies are ESF 6 - Mass Care, Housing and Human Services; and ESF 8 - Public Health and Medical Services.

ESF 6 includes sheltering and feeding victims of disaster, emergency first aid, family reunification, and the distribution of emergency relief supplies. The American Red Cross (ARC) is designated by the NRP as the primary agency responsible for ESF 6.

ESF 8 serves as the basis for federal response to the health needs of disaster victims and is led by the United States Public Health Service's Office of Emergency Preparedness. The office is responsible for managing and coordinating public health and medical services post-impact. Federal assistance may be provided to the states by Epidemic Intelligence Service (EIS) officers from the CDC or by experts from the Agency for Toxic Substances Disease Registry (ATSDR), among others. These federal public health personnel, stationed at regional offices of the US Department of Health and Human Services, can be quickly dispatched to conduct surveillance and rapid needs assessments.

NOTE: More information about the NRP can be found at: http://www.dhs.gov/dhspublic/interapp/editorial/editorial_0566.xml

National Incident Management System (NIMS)

The National Incident Management System (NIMS), mandated in February 2003 by Homeland Security Presidential Directive #5 (HSPD-5), provides a consistent nationwide approach for federal, state, local, and tribal governments, the private sector, and non-governmental organizations to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity. To provide for interoperability and compatibility among federal, state, local, and tribal capabilities, the NIMS includes a core set of concepts, principles, and terminology, including:

- The Incident Command System
- Multi-agency coordination systems
- Training
- Identification and management of resources (including systems for classifying types of resources)
- Qualification and certification
- Collection, tracking, and reporting of incident information and incident resources

NOTE: More information about NIMS can be found at: http://www.fema.gov/nims/

Incident Command System (ICS)

The complexity of incident management, coupled with the growing need for multi-agency and multifunctional involvement on incidents, has increased the need for a single standard incident management system that can be used by all emergency response disciplines. Considering the fiscal and resource constraints of local, state, and federal responders, the Incident Command System (ICS) was adopted as a logical approach for the delivery of coordinated emergency services to the public.

ICS resulted from the obvious need for a new approach to the problem of managing rapidly moving wildfires in the early 1970s. At that time, emergency managers faced a number of problems:

- Too many people reporting to one supervisor
- Different emergency response organizational structures
- Lack of reliable incident information
- Inadequate and incompatible communications
- Lack of a structure for coordinated planning between agencies
- Unclear lines of authority
- Terminology differences between agencies
- Unclear or unspecified incident objectives

Designing a standardized emergency management system to remedy the problems listed above took several years and extensive field testing. ICS was developed by an interagency task force working in a cooperative local, state, and federal interagency effort called FIRESCOPE (Firefighting Resources of California Organized for Potential Emergencies). Early in the development process, four essential requirements became clear:

1. The system must be organizationally flexible to meet the needs of incidents of any kind and size;

2. Agencies must be able to use the system on a day-to-day basis for routine situations as well as for major emergencies;

3. The system must be sufficiently standard to allow personnel from a variety of agencies and diverse geographic locations to rapidly meld into a common management structure; and

4. The system must be cost-effective.

Initial ICS applications were designed for responding to disastrous wildland fires. It is interesting to note that the characteristics of these fire incidents are similar to those seen in many law enforcement, hazardous materials, and other kinds of situations.

- They can occur with no advance notice
- They develop rapidly
- Unchecked, they may grow in size or complexity
- Personal risk for response personnel can be high
- There are often several agencies with some on-scene responsibility
- They can very easily become multi-jurisdictional
- They often have high public and media visibility
- Risk of life and property loss can be high
- Cost of response is always a major consideration

ICS is now widely used throughout the United States as a standardized on-scene emergency management construct specifically designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. It is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. ICS is used by various jurisdictions and functional agencies, both public and private, to organize field-level incident management operations.

Unified Command

Within ICS, Unified Command is a concept which allows multiple agencies with responsibility for the incident, either geographical or functional, to manage an incident by establishing a common set of incident objectives and strategies. This is accomplished without losing or abdicating agency authority, responsibility, or accountability.

Emergency Operations Center (EOC)

An Emergency Operations Center (EOC) is the physical location where department heads, government officials, and volunteer agencies coordinate the response to an emergency. At the PEMA level, the State Emergency Operations Center is a technologically advanced facility staffed around the clock by highly trained personnel. During emergencies, personnel from other state agencies augment the staff of the EOC. At the county and local levels, EOCs also are the central coordination point for response and recovery efforts. These facilities range from large and highly-sophisticated to small and simple.

The Pennsylvania Emergency Management Services Code (Title 35, PaCSA, Para 7101-7707) mandates that each political subdivision establish, equip, and staff an EOC, equipped with warning and communications systems, to support government operations in emergencies and provide other essential functions and equipment for agencies assigned emergency functions.

Challenges to Working Together:
Public Health & Emergency Management

- Occasional conflict & tension
- Need for "sharing a common vision" of preparedness
- Overcoming issues of organizational self-interest
- Need for effective communication
- Solutions will build on the principles of unified collective response reflected in NIMS
- All should recognize that the rural community can offer readiness solutions/assistance for urban counterparts

Chapter 2: Post-Test

1. The Centers for Disease Control and Prevention (CDC), is a federal agency within the:
   - a. U.S. Department of Homeland Security (DHS)
   - b. U.S. Department of Health and Human Services (DHHS)
   - c. U.S. Food and Drug Administration (FDA)

2. The federal government's plan of action when assisting affected states and local jurisdictions in the event of a severe disaster is called the:
   - a. Incident Command System (ICS)
   - b. Emergency Operations Center (EOC)
   - c. National Response Plan (NRP)

3. How many Regional Counterterrorism Task Forces are there in Pennsylvania?
   - a. 1
   - b. 9
   - c. 21
   - d. 50

Additional Resources: Chapter 2

Government Agencies—Federal Agencies, Roles and Responsibilities
Centers for Disease Control and Prevention (CDC) (2005)
http://www.cdc.gov/

Centers for Disease Control and Prevention (CDC) (2005).
Emergency Preparedness and Response: The Laboratory Response Network.
http://www.bt.cdc.gov/lrn/

Federal Emergency Management Agency (FEMA) (2005)
http://www.fema.gov/

Federal Emergency Management Agency (FEMA) (2004). *Emergency Support Functions.*
http://www.fema.gov/about/esf.shtm

Health Resources and Services Administration (HRSA)
http://www.hrsa.gov/

U.S. Department of Homeland Security (DHS) (2005)
http://www.dhs.gov/dhspublic/

United States Department of Health & Human Services (DHHS) (2005)
http://www.hhs.gov/

Government Agencies—Local Agencies, Roles and Responsibilities
Agency for Healthcare Research and Quality (AHRQ) (2005). *Bioterrorism and Health System Preparedness, Issue Brief No. 6: Bioterrorism and Other Public Health Emergencies: Linkages with Community Providers.*
http://www.ahrq.gov/news/ulp/btbriefs/btbrief6.htm

• Audio conference and other materials are linked from the issue brief. A Web-assisted audio conference sponsored by the Agency for Healthcare Research and Quality (AHRQ) in December 2003 examined the role of community providers in detecting and responding to a potential bioterrorist event or other public health emergency.

Centers for Disease Control and Prevention (CDC) (2005).
Emergency Preparedness & Response: Preparation & Planning: State & Local Preparedness.
http://www.bt.cdc.gov/planning/#statelocal

Additional Resources: Chapter 2 (cont'd)

U.S. Department of Defense (2000). *Improving Local and State Agency Response to Terrorist Incidents Involving Biological Weapons.*
http://www.mipt.org/pdf/Improving-Local-State-Response-Terrorist-Incidents-Biological-Weapons.pdf

Government Agencies—State Agencies, Roles and Responsibilities

Centers for Disease Control and Prevention (CDC) (2005).
Emergency Preparedness & Response: Preparation & Planning: State & Local Preparedness.
http://www.bt.cdc.gov/planning/#statelocal

Pennsylvania Department of Environmental Protection (2005).
http://www.dep.state.pa.us/

- • Includes information on Environmental Emergency Response and Pollution Prevention Contingency Plans for water supplies, dams, and other facilities with potential for environmental emergencies.

Pennsylvania Department of Environmental Protection (2005). Information by Subject.
http://www.dep.state.pa.us/info.html

Pennsylvania Department of Health.
http://www.dsf.health.state.pa.us/

- • Homepage of the Pennsylvania Department of Health. See "About Your Health Department" for an overview of its organization and mission.

Pennsylvania Emergency Management Agency (PEMA) (2005)
http://www.pema.state.pa.us/

Pennsylvania Office of Homeland Security. (2004).
http://www.homelandsecurity.state.pa.us/

- • Information on state level homeland security functions in various Pennsylvania agencies, Regional Counter-Terrorism Task Forces, and other fact sheets.

Pennsylvania Office of Homeland Security (2005). Commonwealth Emergency Response Links.
http://www.homelandsecurity.state.pa.us/homelandsecurity/cwp/
view.asp?a=378&Q=127081&homelandsecurityNav=|

U.S. Department of Defense (2000). *Improving Local and State Agency Response to Terrorist Incidents Involving Biological Weapons.*
http://www.mipt.org/pdf/Improving-Local-State-Response-Terrorist-Incidents-Biological-Weapons.pdf

Interagency Communication and Cooperation

DISPATCH Monthly Magazine - Incident Command System.
http://www.dispatchmonthly.com/ics/index.html

- • From the website of DISPATCH Monthly magazine, the site includes a description of incident command, a structural diagram, duties for personnel, and web resources links.

Federal Emergency Management Agency (FEMA). *National Incident Management System.*
http://www.fema.gov/nims/

Non-Governmental Agencies

American Red Cross.
http://www.redcross.org/

Evac: The Emergency Volunteer Air Corps.
http://www.evac.org/

National Voluntary Organizations Active in Disaster (NVOAD).
http://www.nvoad.org/

The Salvation Army.
http://www.salvationarmyusa.org/

Additional Resources: Chapter 2 (cont'd)

Public Health Emergencies
Department of Health and Human Services (2005). *Disasters and Emergencies.*
http://www.os.dhhs.gov/emergency/index.shtml

National Memorial Institute for the Prevention of Terrorism: First Responders.
http://www.mipt.org/First-Responders.asp

   • Presents the resources on the extensive MIPT website of most interest to first responders and to public
   health. Includes reports, articles, and links to other resources on the web.

Public Health Emergencies—Chemical
Centers for Disease Control and Prevention (CDC). National Institute for Occupational Safety and Health
(2004). *NIOSH Pocket Guide to Chemical Hazards.*
http://www.cdc.gov/niosh/npg/

Public Health Emergencies—Detection and Reporting
Pennsylvania Department of Health. *Pennsylvania's National Electronic Disease Surveillance System (Pa-NEDSS).*
http://www.dsf.health.state.pa.us/health/cwp/view.asp?a=171&Q=230681

Public Health Emergencies—Planning
Campbell, P., Frances, J., Meit, M. (2005). *Preparing for Public Health Emergencies: Meeting the Challenges
in Rural America. Conference Proceedings and Recommendations, September 27-28, 2004, Saint Paul, MN*,
University of Pittsburgh Center for Rural Health Practice.
http://www.upb.pitt.edu/crhp/conf_proceed_4.pdf

Federal Emergency Management Agency (FEMA). *Response and Recovery - Emergency Support Function #8 Health
and Medical Services Annex.*
http://www.au.af.mil/au/awc/awcgate/frp/frpesf8.html

Lawerence Berkeley National Laboratory (2005). *Advice for Safeguarding Buildings against Chemical or
Biological Attack.*
http://www.securebuildings.lbl.gov/

U.S. Department of Homeland Security. (2004). *Citizen Corps Program Initiatives.*
http://www.citizencorps.gov/about.shtm

Public Health Emergencies—Response
Centers for Disease Control and Prevention (CDC) Public Health Emergency Response Guide for State,
Local, and Tribal Public Health Directors.
http://www.bt.cdc.gov/planning/responseguide.asp

   • The Public Health Emergency Response Guide for State, Local, and Tribal Public Health Directors is an
   all-hazards reference tool for health professionals who are responsible for initiating the public health
   response during the first 24 hours (i.e., the acute phase) of an emergency or disaster.

U.S. Department of Homeland Security. *Emergencies & Disasters: Declared Disasters & Assistance, a Guide to the
Disaster Declaration Process and Federal Disaster Assistance.*
http://www.dhs.gov/dhspublic/display?theme=16

Mass Care

Chapter 3: Pre-Test

1. "Triage" means:
   - a. To sort
   - b. To fold
   - c. To bandage

2. The highly trained and well-equipped FEMA task forces who rescue victims of structural collapse are known as:
   - a. Disaster Medical Assistance Teams (DMAT)
   - b. Management Support Units (MSU)
   - c. Disaster Mortuary Operational Response Teams (DMORT)
   - d. Urban Search and Rescue Teams (US&R)

3. In the Strategic National Stockpile (SNS), the caches of pharmaceuticals, antidotes, and medical supplies are known as "12-Hour . . . "
   - a. Technical Advisory Response Units
   - b. Push Packages
   - c. Vendor Managed Inventories

Most agencies and jurisdictions develop emergency preparedness and response plans based on their year-round (census) population. However, it is important to consider triage, treatment, and sheltering needs for a far greater number of people such as tourists and evacuees. This is especially true in rural areas, which are potential magnets for evacuees and displaced persons from more populated urban centers following disasters. This was evident following 2005 Hurricanes Katrina and Rita.

Disaster Triage

Triage means "to sort." Triage looks at the medical needs and urgency of each individual patient. Sorting is based on limited data and resource availability. Emergency responders use triage as a way to draw order out of chaos. It facilitates getting care to those who need it and will benefit from it the most, and speeds efficient patient evacuation. Triage systems provide an objective framework for stressful and emotional situations, helping rescue workers to be more effective.

Routine emergency care, including triage, is not typically constrained by resource availability. However, in disasters patient care needs will likely overwhelm local responders' resource capacity. In routine, daily emergencies the rule is "do the best for each individual." In disaster settings, the rule becomes "do the greatest good for the greatest number, to maximize survival." This means that who is sick or injured is less important than the extent and seriousness of their injuries. Disaster Triage is a dynamic process, and is usually done more than once during a response.

The goal of primary disaster triage is to ensure the greatest number of survivors. The assumptions are that medical needs outstrip immediately available resources and that additional resources will become available with time. Primary disaster triage is based on physiology, or the basic physical condition and vital signs of the patient.

The goal of secondary disaster triage is to best match patients' current and anticipated needs with available resources. This phase incorporates a reassessment of physiology, a reassessment of physical injuries, initial treatment and assessment of patient response, and further knowledge of resource availability.

Finally, the goal of tertiary disaster triage is to optimize individual outcome. This must incorporate sophisticated assessment and treatment, ongoing assessment of available medical resources, and determination of the best venue for definitive care.

National Disaster Medical System (NDMS)

Operating within FEMA, the National Disaster Medical System (NDMS) is a federally coordinated system that augments the Nation's medical response capability. Consisting of Disaster Medical Assistance Teams (DMATs), Disaster Mortuary Teams (DMORTs), Veterinary Medical Assistance Teams (VMATS), National Pharmacy Response Teams (NPRTs), National Nursing Response Teams (NNRTs), and Federal Coordinating Centers (FCCs), the purpose of the NDMS is to establish a single integrated National medical response capability for assisting state and local authorities in dealing with the medical effects of major peacetime disasters. Additionally, NDMS provides support to the military and the Department of Veterans Affairs medical systems in caring for casualties evacuated back to the U.S. from overseas armed conventional conflicts.

NOTE: More information about NDMS can be found at: http://www.ndms.dhhs.gov/

Disaster Medical Assistance Teams (DMATs)

Disaster Medical Assistance Teams (DMATs) are self-sustaining squads of licensed, actively participating professional and paraprofessional medical personnel who provide emergency medical care at the site of a disaster. The teams include logistical and administrative staff and all the equipment needed to set up ambulatory clinics and remain self-sustaining for at least 72 hours. DMATs are sent to augment local capacity, not to supplant or replace it. In mass casualty incidents, their responsibilities include triaging patients, providing basic medical care, and preparing patients for evacuation. In other situations, they may provide primary healthcare or assist overloaded medical staffs. Additionally, they are prepared to provide patient care during evacuation to definitive care sites.[1]

When deployed, the DMAT functions under a Management Support Unit (MSU). This unit responds rapidly to the disaster area and provides management support to deployed DMATs. By utilizing the Incident Command System (ICS), issues of logistics, communications, operations, finance/procurement and planning are orchestrated by the MSU. The MSU interfaces with, rather than takes over from the local disaster management system or Emergency Medical Services.

Disaster Mortuary Operational Response Teams (DMORTs)

Disaster Mortuary Operational Response Teams (DMORTs) have been developed as a local component of mass fatality management. DMORTs are composed of private citizens, each with a particular field of expertise, who are activated in the event of a disaster. See detailed description later in this chapter. More information is available in the Mass Fatality section later in this chapter.

Medical Surge Capacity Needs

- Hospital bed capacity (for routine and critical care)
- Capacity for isolation and referral of patients with communicable infections
- Appropriate staffing to manage the short- or long-term surge of patients
- Appropriate staffing needed for mass pharmaceutical dispensing operations or mass vaccination
- Personal protective equipment
- Capacity for trauma and burn care
- Capacity for mental health and substance abuse care
- Redundant communications infrastructure

Veterinary Medical Assistance Teams (VMATs)

Veterinary Medical Assistance Teams (VMATs) are composed of private citizens who are activated in the event of a disaster. VMAT members are required to maintain appropriate certifications and licensure within their discipline. When members are activated, all states recognize licensure and certification and the team members are compensated for their duty time by the Federal government as temporary Federal employees. During an emergency response, VMATs work under the guidance of local authorities by providing technical assistance and veterinary services. Teams are composed of clinical veterinarians, veterinary pathologists, animal health technicians (veterinary technicians), microbiologist/virologists, epidemiologists, toxicologists and various scientific and support personnel. The Pennsylvania State Animal Response Teams (SARTs) are the state-level corresponding units to the VMAT teams.

National Pharmacy Response Teams (NPRTs)

National Pharmacy Response Teams (NPRTs) are located in each of the 10 Department of Homeland Security Regions, and will be used to assist in chemoprophylaxis or the vaccination of hundreds of thousands, or even millions of Americans. Team members, including pharmacists, pharmacy technicians, and pharmacy students, will be enrolled in the National Disaster Medical System, paid a salary when activated, reimbursed for travel and per diem expenses, and have liability coverage outside their state of licensure.

National Nursing Response Teams (NNRTs)

The National Nurse Response Team (NNRT) is a specialty DMAT that will be used in any scenario requiring hundreds of nurses to assist in chemoprophylaxis, a mass vaccination program, or a scenario that overwhelms the nation's supply of nurses in responding to a weapon of mass

destruction event. NNRTs are directed by the National Disaster Medical System in conjunction with a Regional Team Leader in each of the ten standard Federal Regions. The NNRTs will be composed of approximately 200 civilian nurses.

Federal Coordinating Centers (FCCs)

Federal Coordinating Centers (FCCs) recruit hospitals and maintain local non-federal hospital participation in the NDMS, coordinate exercise development and emergency plans with participating hospitals and other local authorities in order to develop patient reception, transportation, and communication plans, and, during system activation, coordinate the reception and distribution of patients being evacuated to the area.

Urban Search and Rescue Teams

The National Urban Search and Rescue (US&R) Response System, established under the authority of FEMA in 1989, is a framework for structuring local emergency services personnel into integrated disaster response task forces. These task forces, complete with necessary tools and equipment and required skills and techniques, can be deployed by FEMA for the rescue of victims of structural collapse.

US&R involves the location, rescue (extrication), and initial medical stabilization of victims trapped in confined spaces. Structural collapse is most often the cause of victims being trapped, but victims may also be trapped in transportation accidents.

US&R is considered a "multi-hazard" discipline, as it may be needed for a variety of emergencies or disasters, including earthquakes, hurricanes, typhoons, storms and tornadoes, floods, dam failures, technological accidents, terrorist activities, and hazardous materials releases. The events may be slow in developing, as in the case of hurricanes, or sudden, as in the case of earthquakes.

Mass Prophylaxis/Vaccination

The federal government has requested that each state develop plans for mass prophylaxis to ensure that the public has quick access to antibiotics and/or vaccines necessary to respond to large-scale disease outbreaks or biological terrorism events. Successful public health response to a bioterrorism attack or disease outbreak relies on the capability to recognize the outbreak, assemble supplies in a timely manner and to provide continuing medical care for affected individuals.

There are four mechanisms to this type of response.

1. Surveillance
2. Supply and Stockpiling
3. Distribution
4. Dispensing

There are two basic approaches to mass prophylaxis and vaccination:

Push Approach consists of bringing medicine directly to individuals or homes in an affected community. Individuals who are homebound or institutionalized in particular may require delivery of medicines and vaccines.

Pull Approach requires that individuals leave their homes or places of work in order to travel to specially designated centers where they can receive medications or vaccinations. With the lack of manpower and equipment in most communities this type of approach may be preferred so long as the challenge of setting up the dispensing center can be overcome with minimal delay and it can handle high patient volumes.

Point of Dispensing (POD) Centers, sometimes referred to as Dispensing/Vaccination Centers (DVCs), are regional sites for unloading and breaking down stockpiled inventories. Population density determines the site location for PODs.

PODs may be open 24-hours a day and will need support services for staff, food preparation, rest areas, toilet facilities and counseling. Each site will also be in need of medical waste disposal.

The size of the sites are dependent on the size and density of the population, number of outbreaks, security for both inside and outside perimeters,

access for transportation, and the number of additional sites. Other issues include storage and facility support, including alternative power generation and communications capabilities.

Strategic National Stockpile (SNS) Program
CDC's Strategic National Stockpile (SNS) is a national repository of antibiotics, chemical antidotes, antitoxins, life-support medications, IV administration supplies, airway maintenance supplies, and medical/surgical items. The SNS is designed to supplement and re-supply state and local public health agencies in the event of a national emergency anywhere and at any time within the U.S. or its territories.

Accessing Pharmaceuticals and Medical Supplies

A five-tiered response plan should be established to provide for increased supply of pharmaceutical and medical supplies as demands escalate.

- **Level 1 Response**: Activation of pharmaceutical and medical supplies using health department and retail pharmacies (small confined outbreaks) and internal reserves at nearby hospitals.

- **Level 2 Response**: Activation of regional hospital mutual aid to aggregate and re-distribute area reserves.

- **Level 3 Response**: Activation of Regional Metropolitan Medical Response System Vendor Managed Inventory (VMI) and other pre-positioned regional medical supplies and equipment. A concurrent request should then be made to PEMA to mobilize other Commonwealth inventories where they exist.

- **Level 4 Response**: Activation and deployment of other Regional, Commonwealth, or interstate inventories where they exist.

- **Level 5 Response**: Activation of the Strategic National Stockpile (SNS) and federally managed "push packages."

The SNS is organized for flexible response. The first line of support lies within the immediate response 12-hour Push Packages. These are caches of pharmaceuticals, antidotes, and medical supplies designed to provide rapid delivery of a broad spectrum of assets for an ill-defined threat in the early hours of an event. Push Packages are positioned in strategically located, secure

warehouses ready for immediate deployment to a designated site within 12 hours of the federal decision to deploy SNS assets.

If the incident requires additional pharmaceuticals and/or medical supplies, follow-on Vendor Managed Inventory (VMI) supplies will be shipped to arrive within 24 to 36 hours. If the agent is well defined, VMI can be tailored to provide pharmaceuticals, supplies and/or products specific to the suspected or confirmed agent(s). In this case, the VMI could act as the first option for immediate response from the SNS Program.

During a national emergency, state, local, and private stocks of medical supplies will be depleted quickly. State and local first responders and health officials can use the SNS to bolster their response to a national emergency, with a 12-hour Push Package, VMI, or a combination of both, depending on the situation. The SNS is not a first response tool.

The SNS Program is committed to have 12-hour Push Packages delivered anywhere in the U.S. or its territories within 12 hours of a federal decision to deploy. The 12-hour Push Packages have been configured to be immediately loaded onto either trucks or commercial cargo aircraft for the most rapid transportation. Concurrent to Push Package transport, the SNS Program will deploy its Technical Advisory Response Unit (TARU). TARU staff will coordinate with state and local officials so that the SNS assets can be efficiently received and distributed upon arrival at the site.

To receive SNS assets, the affected state's governor's office must directly request the deployment of the SNS assets from CDC or the Department of Health and Human Services (DHHS). DHHS, CDC, and other federal officials will evaluate the situation and determine a prompt course of action.

NOTE: More information on the SNS can be found at: http://www.bt.cdc.gov/stockpile/

SNS: Questions to Consider

- If the SNS is delivered to urban areas where the greatest population can be treated, how will rural areas protect their citizens?

- Will rural citizens go to urban areas to access medications and vaccinations? What are the implications for outbreak containment?

Mass Fatality Management

Disaster Mortuary Operational Response Teams (DMORTs) have been developed as a local component of mass fatality management. DMORTs are composed of private citizens, each with a particular field of expertise, who are activated in the event of a disaster. DMORT members are required to maintain appropriate certifications and licensure within their discipline. When members are activated, licensure and certification is recognized by all states, and the team members are compensated for their duty time by the federal government as temporary federal employees. During an emergency response, DMORTs work under the guidance of local authorities by providing technical assistance and personnel to recover, identify, and process deceased victims.

The DMORTs are directed by the National Disaster Medical System (NDMS). Teams are composed of funeral directors, medical examiners, coroners, pathologists, forensic anthropologists, medical records technicians and transcribers, fingerprint specialists, forensic odontologists, dental assistants, X-ray technicians, mental health specialists, computer professionals, administrative support staff, and security and investigative personnel.

FEMA's Response Division, in support of the DMORT program, maintains two Disaster Portable Morgue Units (DPMUs). Both DPMUs are staged at FEMA Logistics Centers, one in Rockville, MD and the other in San Jose, California. The DPMU is a depository of equipment and supplies for deployment to a disaster site. It contains a complete morgue with designated workstations for each processing element and prepackaged equipment and supplies.

While DMORTs may be activated to assist in a local disaster, it must be stressed that they may not be able to respond and that local and state resources will have to be utilized. Local coroners/medical examiners are ultimately responsible for the coordination of mass fatality management in Pennsylvania. The Pennsylvania State Coroners Association, the Funeral Directors Association of Pennsylvania and the Pennsylvania Emergency Management Agency are support agencies that will help the coroner/medical examiner in mass fatality management in the Commonwealth.

Local coroners and medical examiners should have a Disaster Response Plan written and on file at their regional dispatch center. This plan will have sites listed that may be used for temporary morgue locations and various other local resources that may be utilized.

Disaster Mental Health Services

Much of the mental health work conducted early in a disaster response will focus on the provision of tangible services to normal people under stress. This may include providing information about

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Victim Identification and Mortuary Services

The National Response Plan tasks the National Disaster Medial System (NDMS) with providing victim identification and mortuary services. These responsibilities include:

- Temporary morgue facilities
- Victim identification
- Forensic dental pathology
- Forensic anthropology methods
- Processing and preparation
- Disposition of remains

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available services, insurance benefit or loan guidance, assistance with applications at government agencies, healthcare, childcare, transportation, and other routine assistance. The most important way of helping may be in simply listening and indicating interest or concern. If evacuation is required, responders should keep families together whenever possible and try to keep natural support systems intact.

Services typically provided following disasters include telephone helplines, information and referral services, literature on the emotional effects of disasters, facilitation of self-help activities, support groups, crisis counseling, public education through the media, information sessions for community groups, grief support services, and advocacy services.

Throughout the entire disaster relief period, the following general strategies should be followed by first responders and others involved in disaster response:

- Demonstrate clear decision making so victims feel that designated leaders are active in the response;

- Issue warnings with instructions for specific actions that should be taken;

- Plan ahead for necessary resources with call-up procedures;

- Tailor activities and services provided in the aftermath of a disaster to the community served and involve them in the development and delivery of those services;

- Target psychosocial services toward "normal" people responding normally to an abnormal situation; and

- Identify persons at risk for severe psychosocial or social impairment due to their experience of the disaster. [2]

Disaster mental health issues are discussed in more detail in Chapter 6.

Chapter 3: Post-Test

1. "Triage" means:
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    b. To fold
    c. To bandage

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    c. Disaster Mortuary Operational Response Teams (DMORT)
    d. Urban Search and Rescue Teams (US&R)

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    a. Technical Advisory Response Units
    b. Push Packages
    c. Vendor Managed Inventories

Additional Resources: Chapter 3

Public Health Emergencies—Response
Centers for Disease Control and Prevention (CDC) (2005). *Strategic National Stockpile.*
http://www.bt.cdc.gov/stockpile/

Federal Emergency Management Agency (FEMA) (2004). *Urban Search & Rescue (US&R).*
http://www.fema.gov/usr/
   • US&R teams are described, and information on training, US&R participants, supporting documentation, and links to related websites are included.

Pennsylvania State University College of Agricultural Sciences (2005). *Pennsylvania State Animal Response Team.*
http://www.pasart.org/
   • PA-SART is a private non-profit organization that plans and coordinates management of farm animals and pets in emergencies at the county level. The website provides information on PA-SART's mission and organization. It includes County Animal Response Team contact information and meetings, and links to further resources on the web.

U.S. Department of Homeland Security (2005). *Disaster Medical Assistance Team.*
http://www.ndms.dhhs.gov/dmat.html

U.S. Department of Homeland Security (2005). *Disaster Mortuary Team.* http://ndms.dhhs.gov/dmort.html

U.S. Department of Homeland Security (2005). *Veterinary Medical Assistance Team.*
http://www.ndms.dhhs.gov/vmat.html

U.S. Department of Homeland Security (2005). *National Pharmacy Response Team.*
http://www.ndms.dhhs.gov/nprt.html

U.S. Department of Homeland Security (2005). *National Nursing Response Team.*
http://www.ndms.dhhs.gov/nnrt.html

U.S. Department of Homeland Security (2005). *National Disaster Medical System.*
http://www.ndms.dhhs.gov/

References: Chapter 3
1,2 Landesman, L.Y. (2001) *Public Health Management of Disasters: The Practice Guide.* Washington, DC: American Public Health Association

Risk and Crisis Communication*

chapter 4

Chapter 4: Pre-Test

1. The first step in emergency risk communication is to consider the:
   a. audience
   b. medium for your message (e.g. television, print, radio, etc.)
   c. legal implications

2. (T or F) When developing your message, it is important to express compassion and acknowledge public uncertainty and fear.
   a. True
   b. False

3. The most critical element of a Risk Communication Plan is:
   a. pre-packaged messages
   b. its integration into the overall emergency response plan for your organization
   c. the home phone numbers of all members of your organization

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Communications before, during, and after disaster strikes are an essential element in the success of prevention and relief efforts. Communicating in a crisis is different from other times. In a serious crisis or catastrophic event, all affected people take in information differently, process information differently, and act on information differently. The public's primary concerns include learning the facts in order to empower decision-making, being involved as a participant rather than a spectator, monitoring resource allocation and recovering or preserving well-being and normalcy. Common communication failures that inhibit operational success include mixed messages from multiple experts, late release of information, paternalistic attitudes, failing to counter rumors and myths in real-time, and public power struggles and confusion.

Before any discussion of the fundamental components of emergency health risk communication, it is necessary to fully understand the concept of risk. Risk is defined as "the probability that exposure to a hazard will lead to negative consequences." [1]

There are two dimensions to risk – the physical hazard caused by exposure, and the reaction to the hazard, also referred to as "risk perception." For example, the anthrax attacks in the fall of 2001 introduced a physical hazard that ultimately injured 22 people and killed five. However, because the nature of the attack (using the mail system) could potentially affect nearly everyone, the perception of this particular risk was not proportional to the actual physical risk.

In general, people are more likely to fear risks that are:

- New vs. Old (West Nile Virus vs. Lyme disease)
- Man-made vs. Natural (nuclear vs. solar radiation)
- Involuntary vs. Voluntary (air pollution vs. smoking)
- Catastrophic vs. Chronic (terrorist event such as 9/11 vs. cardiovascular disease)
- Affecting Children vs. Adults (Sudden Infant Death Syndrome vs. Sudden Cardiac Arrest)

- Not Controlled vs. Controlled (flying vs. driving)
- Exotic vs. Familiar (smallpox vs. cancer)
- Affecting "Me" vs. "Others" (terrorist attack in U.S. vs. terrorist attack overseas)
- Causing dreadful graphically portrayed suffering vs. Unseen or unrecorded (Hurricane Katrina vs. 2005 Pakistan earthquake).[2,3]

Who is Responsible for Crisis Comunications?

If it is not your job to speak to the media under normal circumstances, it is usually not appropriate to do so during a crisis. It is very important to know who is in charge of communication within your agency, or within the Incident or Unified Command structure in which you are working. With few exceptions, all communication should go through a Public Information Officer (PIO) or equivalent. Within ICS, the PIO serves as the conduit for information to internal and external stakeholders, including the media or other organizations seeking information directly from the incident or event.

Communicating with the Public

Through risk communication, the communicator hopes to provide information to an audience about the expected outcome of a specific behavior or exposure. When communicating risk, the communicator usually includes information on the type of outcome, whether beneficial or harmful, as well as the likelihood of that outcome. Typically, risk communication focuses on adverse outcomes.

The primary goals of risk communication are to:

1. Put risks in perspective. There are many factors that influence risk perception. Properly conducted risk communication can inform the public and help ensure that public views are based on fact.

2. Empower people to make more informed judgments. People must make decisions every day and the more informed they are regarding potential risks, the more able they are to make sound decisions. Risk communication can inform decisions such as parents deciding whether to vaccinate their children, teenagers deciding whether to smoke, a patient deciding whether to undergo a particular medical procedure, or people deciding whether to stockpile gas masks or medication.

3. Help people process fear and risk perception and to actually change behavior, thus helping to reduce panic on a population scale, prevent looting, cause people to evacuate or stay put, etc.

Health risk communication in an emergency can be broken down into five fundamental components. These are: consider the audience, develop the message, select the appropriate spokesperson, communicate to the public, and be prepared in advance.

Consider the Audience

Your message should be crafted to address the unique needs of a given population responding to a specific threat. The first step in emergency risk communication is to consider the audience or audiences to be addressed. The needs of your audience are largely related to their relationship or proximity to the event and their demographic characteristics.

Proximity is a relative term. People do not necessarily have to be geographically close to the event to be profoundly affected by it. During a terrorist event, for example, concerns are amplified and individuals who are at great distances from the event may be affected. In addition to geographic proximity to the event, individuals may be affected based upon proximity to the risk or the vector for the risk, relationships to people involved, special vulnerabilities, etc.

Those in the epicenter of the emergency, namely victims and first responders, often have concerns about their safety and are seeking action messages and directives. Those slightly further removed from the emergency, such as families of victims and first responders, media, and the public in the immediate area, do not require action messages, but rather facts about the situation. Those even further removed from the emergency also need information.

What the public will ask first:
- Are my family and I safe?
- What have you found that may affect me?
- What can I do to protect myself and my family?
- Who caused this?
- Can you fix it?

What the media will ask first:
- What happened?
- Who is in charge?
- Has this been contained?
- Are victims being helped?
- What can we expect?
- What should we do?
- Why did this happen?
- Did you have any forewarning?

Risk communication typically involves communicating to the public. However, it is crucial that people and agencies involved in responding to an emergency have the information they need as well. Emergency responders (fire, police, EMS, public health, and medical) are often concerned about the adequacy of the resources available to accomplish response and recovery efforts, their personal safety, and the safety of their loved ones.

It has been found that first responders are more likely to stay focused on their job if they are assured that their families are safe.

Local, state, and national leaders are often concerned about the adequacy of resources, liability, the quality of response and recovery planning and implementation, and opportunities for expressions of concern. During an emergency, different audiences will have different questions and different priorities. It is crucial to consider who your audience is prior to creating your message, e.g., What are the demographics of your town/city/state?

It is also critical to note that approximately half of the U.S. population demonstrates low literacy levels, and read at or below the 8th grade level. Also, many people may not speak English or may speak English as a second language. Keep this information about your audience in mind when crafting your message.

Develop the Message
In a heightened state of anxiety, it is difficult for people to process complex messages. It is therefore vital to craft and present a short, concise, and focused message that provides only the relevant information.

When developing your message:
- DO check your facts.
- DO give positive action steps.
- DO use personal pronouns.
- DO use a serious, respectful tone, and do not use humor – though humor can be a good stress reliever, you must be sensitive. When people are desperate, they are less likely to appreciate humor, and will view you and your organization as not taking the incident seriously.
- DO explain what is currently being done.
- DO tell the truth. Be transparent.

Conversely:
- DO NOT use technical jargon – Instead of saying "people may suffer morbidity and mortality," say "people exposed may become sick or die." Instead of "correlation," say "relationship." Instead of "epidemic," say "outbreak." Additionally, do not use acronyms such as "FEMA" which many may not recognize.
- DO NOT use condescending or judgmental phrases ("Only hypochondriacs would walk around with a prescription for Cipro").
- DO NOT criticize another person or agency.
- DO NOT make any promises that you cannot deliver. However, you can promise to remain committed throughout the emergency response.
- DO NOT speculate or play worst-case scenario. If you do not have evidence as to what is causing a particular outbreak, why worry people further by mentioning the word "smallpox"? Speculation only weakens credibility.
- DO NOT discuss financial costs. During the initial phase of emergency response, the magnitude of the problem should be discussed in terms of the health and safety of the public. Loss of property is secondary, and discussion of costs and losses will make you appear insensitive to human suffering.

Your audience will often be listening for actions they can take, including ways to protect themselves and who to contact for more information.
- Identify websites, 800-numbers, or other ready sources of information.
- Create memory aids for actions steps so that information is easier to remember, e.g., "stop, drop, and roll" to remember what to do during a fire.
- Provide information about signs and symptoms so that people may self-assess the likelihood of personal exposure, which will help to reduce the proportion of worried-well seeking medical care.

One of the most important things to remember in risk communication is to stay on message. You will be asked questions that may deviate from the point you need to make. Some phrases that may help to steer the discussion back to your core message include:
- "What's important is to remember … "
- "I don't have the information to answer that question, but I can tell you … "
- "Before I forget, I want to tell your viewers … "
- "Let me put that in perspective … "

Follow the STARCC Principle

Simplicity, credibility, verifiability, consistency, and speed count when communicating in an emergency. An effective message must be repeated, come from a legitimate source, be specific to the emergency being experienced, and offer a positive course of action.

The first messages following a disaster are critical. Get it wrong, and you will be playing catch-up for the remainder of the crisis.

So, in the initial communications following a disaster, you should follow the **STARCC Principle** whereby your public message must be:

       Simple

       Timely

       Accurate

       Relevant

       Credible

       Consistent

Select the Appropriate Spokesperson

Once you have developed your message, the next step in emergency risk communication is to select a spokesperson. Again, with few exceptions, all communications with the media should go through an identified agency or approved Public Information Officer (PIO).

Spokespersons must be selected very carefully. An ideal spokesperson is someone with technical expertise relevant to the current emergency, as well as leadership experience. The spokesperson must be a trusted presenter who embodies the organization and gives it human identity. Furthermore, spokespersons:

- Should be trained in risk communication and be well-versed on both the organization and the topic at hand.
- Should be the same person throughout an event in order to achieve the trust of the public.
- Must be at the appropriate level in the organizational hierarchy.

People are looking to the spokesperson to effectively perform the following:

- Communicate information the public needs to know to reduce the incidence of illness or death.
- Describe the health and safety risks for individuals and communities.
- Describe the incident and its magnitude.
- Relate what is being done to respond to the incident – people are eager to hear what is being done to protect them.

Communicate to the Public -
Be First, Be Right, and Be Credible

Once you have considered your audience, developed the message, and selected an appropriate spokesperson, the fourth step in emergency risk communication is to effectively communicate about risk to the public.

The three most important things to keep in mind when communicating to the public during an emergency are the timeliness of communication, the factual content of the message, and the trust and credibility of the message: Be First, Be Right, and Be Credible.

The first message is often the most influential. This is one reason to be prompt in communicating with the public during an emergency. Furthermore, the timeliness with which you respond to the public may be perceived as an indicator of your own level of preparedness. It is very difficult to face the public when there is uncertainty. However, risk communication does not always mean having the answers, but rather having a presence. Even if you do not have answers, so long as you tell people what you are doing to address the problem, people will feel reassured.

It is important to ensure that all credible sources share the same facts, that you repeat those facts often, that you are consistent, and that you avoid too many details early on – you risk that those details are wrong and you will compromise your credibility.

The tone and style of your delivery is just as important as the content of the message. It is important to establish trust and credibility by expressing:

- Empathy and caring
- Competence and expertise
- Honesty and openness
- Commitment and dedication

Remember since the media does not work for you, there will often be a gap between what you think they should focus on and what they actually cover. Also, it is the job of the media to look for alternative perspectives on what is happening. Furthermore, it is important to acknowledge that the media are striving to meet their own demands - they have space and time to fill and deadlines to meet. A few tips for interacting with the media include:

- Be available, around the clock if necessary, to help reporters get the correct facts in time for their deadlines.
- Establish a schedule for information release in order to give the media a reasonable expectation of when new information will be provided.
- Provide all media with the same access at the same time – do not play favorites. Technology allows for this through onsite media opportunities, broadcast faxes or emails, teleconferencing, etc.; a scheduled press conference also works.
- If incorrect information that could harm the public is presented by the media, it is your responsibility to correct these facts as soon as possible.
- Do not overlook local media in favor of national media and well-known personalities.
- Consider non-mainstream media sources for populations that do not speak English, speak English as a second language, or otherwise receive their information through alternative channels.

Some additional tips when interviewing with the media include:

- Know in advance who will be conducting the interview.
- Set ground rules, such as topics to be covered, the timeframe for the interview, etc.
- If you are going to be on television, consider your appearance. Make sure that you are dressed appropriately to represent your agency.

- Wear professional but bland clothes and remove any pens, nametags, etc., that may be visually distracting.
- Practice speaking into a microphone – most people speed up, so you may need to concentrate on slowing down and deliberately pausing between sentences to appear in control. Keep your hands quiet. Do not be afraid to pause for a moment to check your notes or collect your thoughts.

If you are not the spokesperson for your agency, you should not speak to the media. However, the media may still approach you. Ways to handle this include:

- Know who the spokesperson is for your agency and direct inquiries to that person.
- Do not disclose information without express permission to do so.

Be Prepared in Advance –
Establish a Risk Communication Plan
The final fundamental component of emergency risk communication is to be prepared pre-crisis by establishing and testing a Risk Communication Plan for your agency.

The most critical element of a Risk Communication Plan is its integration into the overall emergency response plan for your organization. As such, it should be created with the worst case scenario in mind and should reflect inter- and intra-agency coordination.

Like any Emergency Operations Plan, the Risk Communication Plan must include provisions for staff, space, and supplies.

A Risk Communication Plan should include:
- Signed endorsement from your director
- Documentation of staff roles & responsibilities
- Instructions for internal information verification procedures
- Agreements regarding who is authorized to release information
- An updated local/regional media contact list
- Procedures to coordinate with other offices
- An updated list of designated spokespersons
- Updated contact information for emergency response information partners
- Procedures to secure needed resources
- Pre-identified news sources with updated contact information.

Communication Systems
Responding agencies should prepare to use an integrated system to communicate during the impact and post-impact phases of a disaster. Redundancy in systems is essential due to technological limitations and the vulnerability of public networks.[4]

Following disasters such as earthquakes, hurricanes, tornadoes, floods, and ice storms, landline services (traditional phone lines) are likely to be nonfunctional. Arrangements must be made to receive calls through an emergency telecommunications system if the landline or cell phone circuits are overloaded or not operational. Telephone lines coming into communication centers should be buried, clearly marked, and protected from damage. Emergency management agencies will have radio networks available, and public health and healthcare agencies can disseminate health advisories through both radio and television.

To avoid overload of radio frequencies, protocols must be in place to limit length of conversations and to establish several radio transmitter-receivers operating on multiple frequencies. Fixed facilities (fire and police departments, hospitals, health departments) should have standby sources of power to support lighting, ventilation, heating, air conditioning, computers and communications equipment.

Cellular telephones depend on the existence of relay stations or cells. Each cell has a limited capacity for simultaneous communications and covers only a defined radius. If too many people are using their cell phones, these systems will crash. More importantly, cells are usually concentrated in urban areas and along major traffic routes. Rural areas may not be covered by such systems. Satellite systems are very expensive and may not always work if weather interrupts the transmission. In Hurricane Katrina, cell phone towers were located above water. Unfortunately, they did not have independent power sources, and thus were disabled when general power was lost.

The federal government, and most emergency management agencies, use the Radio Amateur Civil Emergency Services' (RACES) licensed amateurs who provide redundant communication support. The RACES operate on the same radio wavelengths and currently provide support to the American Red Cross (ARC). All users of cellular, analog, and radio communications must recognize that these networks are not secure and that anyone with a receiver can hear the conversations.

SPECIAL RISK COMMUNICATION CONSIDERATIONS DURING A TERRORIST EVENT

The ability to detect, prevent, and respond to terrorist attacks against our nation is one of the highest priorities for the U.S. government today.

The goal of terrorism is to not only cause harm, but to cause fear and panic. As a result, those not directly harmed by a terrorist event are nonetheless traumatized.

The anthrax attacks of 2001-2002 resulted in 11 cases of pulmonary anthrax, 11 cases of cutaneous anthrax, and a total of five deaths. There were, relatively speaking, very few cases, affecting only a handful of states.

In response to fear and panic however, people across the country sent all sorts of items containing "white powder" to their state and local health departments - even a whole phone booth in one case!

Like any emergency, terrorist incidents may involve mass casualties and damage to property. However, there are some differences that must be taken into account when communicating risk to the public:

- People are more afraid of man-made, catastrophic, and unknown risks and people will react with more fear to terrorist incidents;

- A terrorist incident, particularly a bioterrorist incident, may not be recognizable until there are multiple casualties, so that people will be unsettled by the perceived late detection and response;

- There may be an elevated risk of multiple events with a terrorist incident, also leading to more fearful reactions;

- Responders are at a higher risk of becoming casualties during a terrorist incident due to the uncertain nature of the event which can lead to a feeling of public helplessness;

- During a terrorist incident, the location is treated as a crime scene, which may provoke further fear and panic;

- Unlike other types of emergencies, there is more fear that a terrorist event could happen anywhere - nobody is safe and potentially everyone is vulnerable.

Adapted from *Crisis and Emergency Risk Communication.* CDC, October 2002.

Chapter 4: Post-Test

1. The first step in emergency risk communication is to consider the:
    a. audience
    b. medium for your message (e.g. television, print, radio, etc.)
    c. legal implications

2. (T or F) When developing your message, it is important to express compassion and acknowledge public uncertainty and fear.
    a. True
    b. False

3. The most critical element of a Risk Communication Plan is:
    a. pre-packaged messages
    b. its integration into the overall emergency response plan for your organization
    c. the home phone numbers of all members of your organization

Additional Resources: Chapter 4

Communicating with the Public
Association of State and Territorial Health Officials (ASTHO) (2002). *Communications in Risk Situations-Responding to the Communication Challenges Posted by Bioterrorism and Emerging Infectious Diseases*.
http://www.astho.org/pubs/ASTHO%20Risk%20Communication%20e-Workbook.htm

• Also see the 2 companion webcasts at:
http://www.astho.org/docs/productions/0306riskcomm.html
and http://www.astho.org/docs/productions/0411webcast.html

Centers for Disease Control and Prevention (CDC) (2005). *Psychology of a Crisis.*
http://www.gspra.org/docs/2004confmaterials/
Psychology%20of%20a%20Crisis.pdf#search='STARCC%20Principle'

Center for Risk Communication.
http://www.afpaa.org/www.centerforriskcommunication.org/home.htm

Massachusetts Department of Public Health (2004). *Seven Cardinal Rules of Risk Communication.*
http://www.mass.gov/dph/cdc/epii/broadcast/risk_communication_resources.doc

Navy Environmental Health Center (NEHC) *Risk Communication Primer.*
http://www-nehc.med.navy.mil/herc/primer/

Substance Abuse and Mental Health Services Administration (2002). *Communicating in a Crisis: Risk Communication Guidelines for Public Officials.*
http://www.riskcommunication.samhsa.gov/RiskComm.pdf

References: Chapter 4

1 Ropeik D, Gray G. (2002). *Risk: A Practical Guide for Deciding What's Really Safe and What's Really Dangerous in the World Around You.* Boston, MA: Houghton Mifflin.

2 Covello VT, Peters RG, Wojtecki JG, Hyde RC. (2001). Risk communication, the West Nile virus epidemic, and bioterrorism: responding to the communication challenges posed by the intentional or unintentional release of a pathogen in an urban setting. *J Urban Health* 2001;78:382-391

3 Ropeik D, Gray G. (2002). *Risk: A Practical Guide for Deciding What's Really Safe and What's Really Dangerous in the World Around You.* Boston, MA: Houghton Mifflin.

4 Landesman, L.Y. (2001). *Public Health Management of Disasters: The Practice Guide.* Washington DC: American Public Health Association.

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Powers and Authorities (Legal Issues)*†

chapter 5

Situations in Which Legal Issues May Arise

Public health emergencies are fraught with potential legal concerns. Most often these issues involve situations related to the following:

- The declaration of emergency
- Coordination of federal, state, & local authorities
- Coordination between jurisdictions
- Disease reporting and surveillance
- Privacy and confidentiality
- Quarantine and isolation
- Control and protection of property
- Civil liability

Overview of the Legal Principles Guiding Public Health Practice – Source of Law

The legal authority which permits public health authorities to conduct essential public health services is derived from four sources:

1. **Constitutional** – the United States Constitution and the Constitution of each state.

2. **Statutory** - the legislative branch (the U.S. Congress and the Pennsylvania Legislature) enacts laws that become part of United States law and the Pennsylvania code respectively. In Pennsylvania, the statutes are compiled into the state code, referred to as the Pennsylvania Consolidated Statutes. Similarly, ordinances enacted on the local level also have the force of law.

3. **Regulatory** – these are the rules promulgated by executive branch agencies such as the Pennsylvania Department of Health or the Pennsylvania Emergency Management Agency, under the statutory authority granted to them by the legislative branch.

4. **Common Law** – this refers to the law made by judges in courts as they interpret constitutional provisions, statutes and regulations. The interpretation of these statutes, regulations, and constitutional provisions contribute to the body of common law.

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* The information contained herein is not intended to serve as legal advice. It is meant only to serve as a foundation for understanding the legal principles that underlie public health legal authority and the actions that may be taken to provide for the public's health. Legal counsel must be sought for legal advice regarding how to properly manage public health emergencies.

Federal Authority to Regulate Public Health – Commerce Clause

The 10th Amendment of the United States Constitution reserves to the states all powers not expressly delegated to the federal government - there is no such delegation of federal responsibility for public health. However, throughout the history of our nation, Congress has used Article 1 § 8 (the "Commerce Clause") of the U.S. Constitution as a means of regulating public health. Congress has used the Commerce Clause to levy taxes and regulate commerce between the states. Over the years, this has been interpreted by courts to include the authority to regulate numerous areas of public health, including environmental health, food and drug safety, occupational safety, and more.

State Authority to Regulate Public Health – Police Power

As expansive as the Federal government's role may be in protecting the health of the public, because of the 10th amendment, each state holds the lion's share of power to regulate public health activities within its borders. Each state is responsible for the health and safety of its residents and the authority for each state government to do so is referred to as "police power." Mr. Lawrence Gostin, a noted public health legal scholar has defined "police power" as "the authority of the state to enact laws and promulgate regulations to protect, preserve and promote the health, safety, morals, and general welfare of the people." [1]

Examples of how the states exercise their police power to protect public health include: regulations requiring the use of safety belts; smoking area restrictions; required motorcycle and/or bicycle helmet use; and mandated immunization for school attendance. State public health legal authority also includes: the ability to inspect or close premises; licensure of health professionals and facilities; the ability to limit the movement of people (isolation and quarantine); required testing and treatment for suspected infectious disease; seizure, embargo, or impound of food and hazardous substances; the ability to board planes, trains, buses, and ships as part of disease control; review of medical records; and conducting interviews to investigate a public health issue.

Pennsylvania Public Health Legal Authority

In Pennsylvania, there are four main sources of public health legal authority:

1. The Disease Prevention and Control Law of 1955 (35 P.S. §521 et. seq.)
   - Regulation of Persons: Establishes compulsory vaccinations and permits compulsory examination; requires reporting of specified diseases; and authorizes isolation and quarantine.

   - Regulation of Professions and Businesses: Requires that certain businesses and professions be registered, licensed or permitted; and enables searches and inspections for public health purposes.

   - The Control of Nuisances and Dangerous Conditions: Permits the health authority to order the abatement of conditions which threaten public health.

2. The Aministrative Code - Chapter 8
   - Set minimum programs and established responsibilities of each county board of health

3. Local Health Administration Law (16P.S. §§12001 – 12028)
   - Established county health departments
   - Defined powers/duties of departments and directors
   - Created Boards of Health
   - Authorized grants to county health departments

4. Pennsylvania Counterterrorism Planning, Preparedness and Response Act of 2002 (35 P.S. §2140.101 et. seq.)
   - Provided civil liability immunity for those acting under the provision of the Act
   - Permitted limited emergency isolation and quarantine without notice

Limitations to Authority

While state and federal laws provide significant authority enabling public health officials to address emergencies, the scope of public health legal authority is not without constraint. Constitutional principles and state and federal laws impose limitations upon the actions that can be taken by the state in the name of public health and safety.

Privacy

The 4th Amendment to the US Constitution provides that people can be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures. This amendment, along with a number of state and federal privacy standards and confidentiality laws,[2] protects individuals from unreasonable searches and seizures and protects the privacy of personally identifiable health information. The Privacy Act of 1974 mandates that healthcare providers that receive payment from Medicare must keep medical records confidential (5USCS 552a). HIV, mental health and substance abuse treatment centers are subject to the confidentiality provisions of the Public Health Service Act, which severely limits who can receive records from these providers and under what circumstances. Furthermore, healthcare records of students 18 years or older receiving health services at schools and universities

fall under the privacy protections of the Family Educational Rights and Privacy Act, (20 USCS 1232g).

Most notably, the privacy rules of the Health Insurance Portability and Accountability Act (HIPAA) have restricted the sharing of health information. With good reason, HIPAA is cited as the federal law that most rigidly controls and prohibits the sharing of personally identifiable protected health information. However, the privacy rule of HIPAA does not restrict all disclosures of protected health information in the absence of patient authorization. As described in the Code of Federal Regulations (45 CFR 164.512(b)(i)) and by the Centers for Disease Control and Prevention and the Department of Health and Human Services in a May 2003 Supplement to the Mortality and Morbidity Weekly Report (MMWR),[3] with some limitations, public health information may be disclosed when the covered entity is required (not just permitted) to do so by law (42 CFR 164.501). In addition, public health information may be disclosed to a public health authority authorized by law to collect such information for the purpose of controlling disease, injury or disability. These purposes include public health surveillance, investigations and interventions (45 CFR 164.512(b)(i)). Furthermore, HIPAA permits protected health information to be disclosed to law enforcement without authorization pursuant to a court order, subpoena or other legal order if the disclosure is authorized by another statute, provides information about a crime or is necessary to prevent serious harm to the individual or others.

Governmental Use of Private Property

The Constitution of the United States and the Constitution of Pennsylvania each protect an individual's right to the use and enjoyment of his/her personal property. This right, however, is not absolute. Government may interfere with an individual's use and enjoyment of personal property in an emergency. Also, when government action is intended to protect the public from harm and is employed in a non-discriminatory fashion, the police power can be utilized to restrict the use and enjoyment of private property when such action is necessary to preserve public health, safety and morals.[4] Governmental action of this type may be considered a "taking" and in certain circumstances the owner of the property may be entitled to compensation for such activity.

Restrictions Upon Civil Liberties

When the state acts to restrict an individual's civil liberties, there are significant constitutional issues which must be considered before such action is taken. The 5th and 14th amendments of the U.S. Constitution provide for what is called "equal protection" and "due process."

At its base, the 14th amendment equal protection clause means that all persons similarly situated must be treated the same way under the law. For example, absent a valid epidemiologic reason for doing so, a government initiated program could not single out a specific ethnic group within a neighborhood for quarantine, and permit others in the neighborhood to freely come and go.

Both the 5th and 14th U.S. Constitutional Amendments require that before an individual's civil liberties may be imposed upon, the individual must be afforded "due process."

There are two types of due process - procedural due process and substantive due process.

Procedural Due Process requires that when an individual's civil rights are to be restricted he/she must first be given:

- Notice of the impending restriction
- An opportunity to be heard
- Access to legal counsel
- An opportunity to call witnesses on his/her own behalf
- The opportunity for a final decision to be reviewed by a judge prior to any restriction of liberty, property, or privacy

Substantive Due Process requires that the substance of the law, as opposed to the procedures for enforcing it, relates to the governmental purpose for enacting it, and the application of the law is no more broad than that which is required to accomplish that purpose.

Compulsory Vaccination, Examination, and Treatment

The constitutionality of compulsory vaccination was settled in 1905 in Jacobson v. Massachusetts (197 U.S. 11; 25 S. Ct. 358; 49 L. Ed. 643), when the U.S. Supreme Court ruled that state "police power included reasonable regulation to protect public health and public safety."[5] The Court acknowledged that "there are restraints, that as members of an organized society we must be subject to, for the common good."[6] However, while states may prescribe specific health measures pursuant to their police powers, and historically have done so in the area of mandated vaccinations for school children and some occupations, in contemporary times these regulations are implemented following informed consent and permit exemptions for religious and/or philosophical reasons. Pennsylvania Code permits exemptions to the mandated childhood immunizations for either medical or religious reasons.[7]

Furthermore, even where it is critical for first responders and healthcare workers to be protected from potential biological agents in order to provide

effective treatment and containment, compelling adults to be vaccinated (with the exception of the military) has been limited.

As for examination, treatment and detention, the Pennsylvania Disease Prevention and Control Act enables a health officer to file a petition in the court of common pleas to commit a person in a communicable stage of a communicable illness who is refusing to submit to treatment so that the person may be isolated, and kept safe until treated and no longer communicable. The health officer is permitted to examine a person suspected of being infected and may treat the person if doing so is indicated. However, because competent adults have a right to refuse medical treatment, and an individual's liberty interests are restricted when forced to undergo examination and treatment, such actions require due process. Furthermore, a 1997 Supreme Court case *Washington v. Glucksberg (521 US. 702)* strongly suggested that the due process clause protects the traditional right to refuse unwanted medical treatment. Therefore, to meet this constitutional standard, any treatment imposed by a state on an unwilling citizen almost certainly must be a last resort.

Civil Liability Concerns

There are myriad laws, professional association guidelines, professional practice standards and community customs that establish the standards of care required and determine the appropriateness of responders' actions. To protect responders however, there are a number of state and federal laws in place to limit the civil liability incurred by professionals and volunteers responding to emergencies. While there is generally a standard which looks to the reasonableness of actions taken when determining liability for harm, this is not an absolute. Limiting responder liability is an area of law requiring a much deeper discussion than this venue permits. Therefore, for more information about civil liability protection, responders must seek legal counsel specific to their response role and professional discipline.

Declaration of Disaster/Emergency (Pennsylvania Specific - Local and State)

A local disaster/emergency may be declared by the governing body of a political subdivision upon finding a disaster has occurred or is imminent. The effect of a declaration is to activate the response and recovery aspects of the emergency operations plan, and to authorize the furnishing of aid and assistance. The period of the declaration cannot exceed seven days unless formally renewed. Any declaration must be given promptly and with general publicity, and be filed with the Pennsylvania Emergency Management Agency (PEMA). This applies to governing officials of each type of municipality (city, borough, township, or home rule municipality).

The governor of the Commonwealth of Pennsylvania has the power to declare a disaster emergency by executive order or proclamation upon finding that a disaster has occurred or the threat of a disaster is imminent. The governor has statutory authority (35 PA. C.S. 7301), as amended, over state, county and municipal government agencies for direction, control, coordination and support of response when the governor deems it necessary to declare a disaster emergency to meet an existing or impending disaster. A governor's emergency declaration can extend for up to 90 days unless renewed.

Fundamental Components of Legal Preparedness for Public Health Emergencies

Preparedness for public health emergencies ultimately requires legal preparedness.

1. Know the laws that regulate your preparedness and response functions; Understand the laws that define your discipline's scope of practice, sphere of responsibility and role in emergency response.

2. Address legal issues in advance; Meet with preparedness planning and response partners to discuss and resolve potential legal concerns before an emergency exists.

3. Plan due process procedures; Identify procedures needed to ensure adequate and timely due process proceedings for individuals whose civil liberties will be affected by the implementation and enforcement of public health orders.

4. Draft documents in advance; In advance of need, draft orders and affidavits that will be required to support implementation and enforcement of public health orders.

5. Establish relationships with other jurisdictions; Get to know the individuals with legal responsibility vertically, within your organization and horizontally, with other preparedness partners.

6. Engage the courts in advance; Recognize that many members of the judiciary (and bar) have not had recent experience with public health laws. Prior to the emergency, engage them in discussions regarding public health legal authority.

7. Communicate across jurisdictions and response agencies.

ISOLATION AND QUARANTINE GUIDELINES

Isolation and quarantine are two strategies designed to protect the public's health by preventing exposure to infected or potentially infected individuals.

• Isolation refers to "the separation of persons who have a specific infectious illness from those who are healthy and the restriction of their movement is needed to stop the spread of that illness."

• Quarantine, in contrast, refers to "the separation and restriction of movement of persons who, while not yet ill, have been exposed to an infectious agent and therefore may become infectious. Quarantine of exposed persons is a public health strategy, like isolation, that is intended to stop the spread of infectious disease."

Both isolation and quarantine may be conducted on a voluntary basis or compelled on a mandatory basis through legal authority. State and local laws and regulations regarding isolation and quarantine vary widely.

CDC. (2004). *Fact Sheet On Legal Authorities for Isolation and Quarantine.*
Available online: http://www.cdc.gov/ncidod/sars/pdf/factsheetlegal.pdf

Chapter 5: Post-Test

1. The power to regulate public health resides primarily at which level of government?
    a. Local
    b. State
    c. Federal
    d. International

2. (T or F) Isolation and Quarantine mean the same thing.
    a. True
    b. False

3. In Pennsylvania, the period of an emergency declaration by a local jurisdiction cannot exceed ____ days unless renewed.
    a. 7
    b. 21
    c. 365

Additional Resources: Chapter 5

Legal Issues

Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities (2004). *Public Health Emergency Legal Preparedness Checklist: Civil Legal Liability and Public Health Emergencies.*
http://www.publichealthlaw.net/Resources/ResourcesPDFs/Checklist%203.pdf

Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities (2004). *Public Health Emergency Legal Preparedness Checklist: Interjurisdictional Legal Coordination for Public Health Emergency Preparedness.*
http://www.publichealthlaw.net/Resources/ResourcesPDFs/Checklist%201.pdf

Center for Law and the Public's Health at Georgetown and Johns Hopkins Universities (2004). *Public Health Emergency Legal Preparedness Checklist: Local Government Public Health Emergency Legal Preparedness and Response.*
http://www.publichealthlaw.net/Resources/ResourcesPDFs/Checklist%202.pdf

Commonwealth of Pennsylvania (2005). *The Pennsylvania Code. Subchapter B. Reporting of Diseases, Infections, and Conditions.* http://www.pacode.com/secure/data/028/chapter27/subchapBtoc.html
Title 28, Pennsylvania Code, Part Vii, Emergency Medical Services.
http://www.pacode.com/secure/data/028/partVIItoc.html

University of Pittsburgh. Center for Public Health Preparedness.
Public Health Emergencies: Agencies with Authority in Pennsylvania Counties & Cities.
http://www.cphp.pitt.edu/pdf/palegalauth.pdf

References: Chapter 5

1 Gostin, L., *Public Health Law: Duty Power and Restraint.* Berkeley: University of California Press, 2000

2 Health Insurance Portability and Accountability Act (HIPAA) 45 CFR 164.502;

3 MMWR HIPAA Privacy Rule And Public Health Guidance From CDC and The U.S. Department Of Health And Human Services May 2, 2003 / 52(S-1); 1-12.

4 Andress v Zoning Board, 410 Pa 77 and United Artist's Theater Circuit, Inc., v. City of Philadelphia, Philadelphia Historical Commission, 535 Pa. 370; 635 A.2d 612.

5 See 197 US 11 at 25.

6 See 197 U.S. 11 at 27.

7 See 28 Pa. Code 23.84

Disaster Mental Health Issues

chapter 6

Public Health Role in Disaster Mental Health

From a mental health perspective, the role of public health in a disaster is to help restore the psychological and social functioning of individuals and the community. Public health also works to reduce the severity of undesirable mental health outcomes due to exposure to natural and technological disasters through prevention, assessment, and response. Along with other governmental and non-governmental agencies, such as the American Red Cross (ARC), public health facilitates recovery and helps to prevent long-term problems by providing information to the public about normal reactions to disaster-related stress and how to deal with these common reactions.[1]

Psychological Impacts of Disaster

The long-term psychosocial effects of disasters may be mitigated or reduced by anticipating what is likely to occur and by preplanning the management strategy. Living and working through a disaster often have profound psychosocial effects. When delivering services during and after a disaster, emergency responders should consider a wide range of possible mental health responses among the victims, fellow responders, and themselves. Disasters are stressful, disruptive experiences that can be life-changing. However, in emergency situations human behavior usually adapts to meet immediate needs in predictable pre- and post-disaster patterns. These responses are not always negative. People generally provide assistance to each other and support those managing the emergency response. Volunteer activity, both inside and outside the affected communities, increases at the time of the impact and continues well into the post-impact period. A common myth of disasters is that the general population is too shocked and stunned to offer real assistance and that most of the real response effort comes from professional response agencies from outside the community. In fact, many disaster tasks are carried out spontaneously by civilian bystanders rather than by trained emergency or relief personnel, especially in large-scale disasters where travel and communication are severely impaired.

Another common misconception holds that physical injuries outnumber and outweigh the burden of mental health issues. In terms of overall impact, the social and psychosocial effects of disasters tend to greatly exceed the physical ones, especially in the case of bioterrorism where people may not know if they have been exposed. These social and psychosocial effects can last months, years, or an entire lifetime. People who already have diagnosed or sub-clinical anxiety issues may decompensate and lose the ability to feel reassured, no matter how "unrealistic" their fears. Victims and responders alike may experience a wide range of stress symptoms. Both victims and responders experience a disaster as a crisis. The trauma of the actual disaster event is intensified by deaths of family, friends, or pets, loss of homes, property, and personal belongings, personal injury or illness, and disruption of regular routines. In time, everyone attempts to return to normal, but delays in return to a comfortable setting may delay emotional recovery.

Normal Reactions to Abnormal Situations

Disaster victims should be viewed as normal people, capable of functioning effectively, who have been subjected to severe stress and thus may be showing signs of emotional strain. Mild to moderate stress reactions during the disaster event, and in the immediate aftermath, are common among survivors, community members, and rescue workers. While some people may show symptoms of extreme stress, these reactions typically do not result in chronic conditions.

That said, a portion of the population will show more serious, persistent symptoms, and exhibit behavior change or develop physical or psychiatric illness. These problems can include depression, alcohol abuse, display of physical symptoms, domestic violence, difficulties in daily functioning, and post-traumatic stress disorder (PTSD). While less serious, insomnia and anxiety may also be experienced by victims and workers alike.

Symptoms of Distress

Children and adults display symptoms of distress differently. For adults, the initial response is usually shock and disbelief. This can last from a few minutes to hours. For the next several days, victims are generally willing to follow directions and are grateful for assistance. They may feel guilty for surviving.

In the following weeks, adult victims will seek out others who were affected and coalesce into groups for activities and recovery. This activity is sometimes followed by despair and depression. Victims may also experience anger, numbing, or dissociation. They may suffer cognitive effects such as impaired memory, concentration, and decision-making ability. Long term, many experience decreased self-esteem and sufficiency. Physical effects can include sleep disturbances leading to insomnia and fatigue.

Those most at risk for psychosocial impacts are children, senior citizens, people with serious mental illness, families of people who die in a disaster, and other groups with special needs. Most people, however, do not see themselves as needing mental health services following a disaster and will not seek services.

Children

Although a disaster affects the entire community, children are an especially vulnerable group that require special attention and programs. The goal for those intervening with children is to help them integrate the experience and to re-establish a sense of security and mastery. Children who are most at risk are those who have lost family members, who have had previous experience with disasters, or who have preexisting family or individual crises. Children often have a difficult time expressing their fears.

Fear can outlast the event and can persist even without physical injury.

Senior Citizens

Senior citizens are another high risk group following a disaster. Generally, senior citizens have fewer support networks, limited mobility, and pre-existing illnesses. Disasters can trigger memories of traumas experienced years earlier. Senior citizens may conceal the full extent of their physical problems following a disaster, fearing that they may need to be institutionalized. Since this population experiences a greater loss of mobility following a disaster, their independence and self-sufficiency are challenged, and they may be less able than younger adults to rebuild their homes, businesses, and recoup other losses. However, it is also possible that some older persons' experience might lend them greater maturity and calmness following a disaster.

Post-Traumatic Stress Disorder

Post-traumatic stress disorder (PTSD) is "a prolonged stress response associated with impairment and dysfunction." PTSD typically appears within three months of experiencing or witnessing a traumatic event such as military combat, natural disasters, terrorist incidents, serious accidents, or violent personal assaults like rape. People who suffer from PTSD often relive the experience through nightmares and flashbacks, have difficulty sleeping, and feel detached or estranged, and these symptoms can be severe enough and last long enough to significantly impair the person's daily life.

PTSD is marked by clear biological changes as well as psychological symptoms. PTSD is complicated by the fact that it frequently occurs in conjunction with related disorders such as depression, substance abuse, problems of memory and cognition, and other problems of physical and mental health. The disorder is also associated with impairment of the person's ability to function in social or family life, including occupational instability, marital problems and divorces, family discord, and difficulties in parenting.[2]

For more information, visit the National Center for PTSD at: http://www.ncptsd.va.gov/

Disaster Mental Health Effects In Responders

Disaster responders "are repeatedly exposed to mutilated bodies, mass destruction, and life-threatening situations while doing physically demanding work that itself creates fatigue, sleep loss, and often risk to one's life."[3] Their role as a help provider can be extremely stressful. Responders can start to experience similar feelings and psychosocial effects as the victims. They may become irritable, finding fault with things that never

bothered them before. They can be suspicious and resent authority, and thus break chain-of-command and other protocols. They can become overly concerned for their own safety and safety of their families. Emergency responders may "face anxiety about their competence, are more affected by the impact of the sights and smells, and can also struggle to balance family responsibilities and work demands in the face of an emergency."[4] In the response to 2005 Hurricanes Katrina, Rita, and Wilma, many responders were overstressed by their working environment, particularly in light of unit understaffing, overwork, and conflicts with other response professionals.

Some responders may develop a condition known as Critical Incident Stress. The symptoms include exhaustion, depression, hostility, loss of empathy and sympathy for victims, dread of new encounters, guilt, helplessness, and isolation. It is important that this syndrome be recognized and treated before it results in absenteeism, interferes with one's ability to work, negatively affects home life, and decreases individual and group morale.

Pennsylvania CISM Teams

In Pennsylvania, there are Critical Incident Stress Management (CISM) Teams available throughout the commonwealth. These 29 CISM Teams are structured in a variety of jurisdictional and organizational forms. Some are city-based, while others are organized by county or EMS region. Still others are organized by professional associations, such as the Pennsylvania Chiefs of Police Association and State Police, or by individual agencies, such as Philadelphia Fire Department and Westmoreland Hospital.

Complete information, including contact information, steps to activate, geographic area of service, services provided and team expertise, and special programs can be found at the Pennsylvania Emergency Health Services Council, Critical Incident Stress Management site, accessible at:
http://www.pehsc.org/CISM.html

Chapter 6: Post-Test

1. (T or F) In a disaster, physical injuries typically outnumber and outweigh the burden of mental health issues.
   a. True
   b. False

2. Name two symptoms of the responder condition, "critical incident stress."
   a.
   b.

3. What condition is associated with "a prolonged stress response associated with impairment and dysfunction?"
   a. Critical Incident Stress Disorder (CISD)
   b. Substance Abuse and Mental Health Services Administration (SAMHSA)
   c. Post-traumatic Stress Disorder (PTSD)

Additional Resources: Chapter 6

Disaster Mental Health
Centers for Disease Control and Prevention (CDC). National Institute for Occupational Safety and Health (2001). *Traumatic Incident Stress: Information for Emergency Response Workers.*
http://www.cdc.gov/niosh/unp-trinstrs.html

Substance Abuse and Mental Health Services Administration. *Emergency Mental Health and Traumatic Stress.*
http://www.mentalhealth.samhsa.gov/cmhs/EmergencyServices/

• Links to SAMHSA resources on disaster mental health, including how to talk with survivors, a mental health services locator, and tip sheets for first responders, found under the Featured Publications section.

U.S. Department of Veteran Affairs National Center for PTSD.
http://www.ncptsd.va.gov/

• Extensive resources on all aspects of post traumatic stress disorder

Critical Incident Stress Management Resources
Pennsylvania Emergency Health Services Council.
http://www.pehsc.org/CISM.html

International Critical Incident Stress Foundation.
http://www.icisf.org/

References: Chapter 6

1 Landesman, L.Y. (2001). *Public Health Management of Disasters: The Practice Guide.* Washington DC: American Public Health Association.

2 http://www.ncptsd.va.gov/facts/general/fs_what_is_ptsd.html

3 Ursano R.J., McCaughey, B.G., Fullerton, C.S. eds. (1996).
Individual and Community Responses to Trauma and Disaster: The Structure of Human Chaos. Cambridge: Cambridge University Press.

4 Landesman, L.Y. (2001). *Public Health Management of Disasters: The Practice Guide.* Washington DC: American Public Health Association.

Protecting Yourself, Your Family, and Others from Infectious Diseases*†

chapter 7

Chapter 7: Pre-Test

1. The number one principle is that in every incident, _____ is primary, and everything else you do is secondary.
    a. heroism
    b. liability
    c. safety

2. _____ sets safety standards that apply for any workers in the United States who may have been exposed to a safety or health hazard.
    a. FEMA (Federal Emergency Management Agency)
    b. OSHA (Occupational Safety and Health Administration)
    c. CDC (Centers for Disease Control and Prevention)

3. Name five of the essential supplies that must be in your family disaster kit.
    a.
    b.
    c.
    d.
    e.

The basic principles of worker safety apply in any hazard situation, regardless of role. The number one principle is that in every incident safety is primary and everything else is secondary. This may sound counterintuitive to the mission of first responders, but rushing into a disaster scene without first considering personal safety may lead to further injury. This will increase the workload of the other responders and use resources needed to treat other victims. In other words, taking risks puts other rescuers and the rest of the community at risk as well. There are also some principles that help to ensure worker safety. These principles should guide every worker training program.

1. Rescuers are more likely to remain safe when they recognize common hazards.

2. Once they have recognized a hazard, rescuers must make sure that the environment is safe before they respond.

3. People must know how to protect themselves. This is most important when judging how and when to enter and exit a hazardous environment, but it also applies to knowing how and when to use appropriate Personal Protective Equipment (PPE).

4. Everyone must know how to call for help, so that if one ends up in a situation where his or her safety is compromised, there is a plan in place to get assistance.

Infection Control Principles

During the cough, cold and flu season, there are some simple tips that will help keep respiratory infections from spreading. Practicing "respiratory etiquette" will go a long way to keep infectious illnesses under control:

- Covering one's nose and mouth when sneezing, coughing or blowing one's nose
- Putting used tissues in the trash
- Washing hands well and often whenever sick or when around someone sick

These simple actions can prevent the spread of the viruses and bacteria that are passed from person-to-person in the tiny droplets of moisture that come out of the nose or mouth of an infected person when they cough, sneeze, or talk. Examples of diseases that can spread this way include bacterial meningitis, whooping cough, measles, and chickenpox. Common symptoms of these illnesses are fever and cough or fever and rash. Certain illnesses, such as tuberculosis, influenza and SARS, require respiratory precautions as well.

In hospitals and waiting rooms, respiratory etiquette means that patients and visitors with fever and cough or rash will be asked to wash their hands or use an alcohol-based hand sanitizer, to wear a mask or to use tissues when coughing or sneezing, and to sit a safe distance (three feet or more) away from other patients.

Other simple precautions that healthy people can take to prevent exposure to and illness from germs from others include:

- Wash hands frequently with soap and water or an alcohol-based hand cleaner
- Avoid touching eyes, nose or mouth
- Avoid sharing food, utensils, beverage containers, lipstick, cigarettes or anything else that might be contaminated with respiratory germs
- Avoid close contact with people who are sick if possible

Emergency Responder and Healthcare Worker Immunization

Because of their contact with patients or infective material from patients, many healthcare workers (e.g., physicians, nurses, emergency medical personnel, dental professionals and students, medical and nursing students, laboratory technicians, hospital volunteers, and administrative staff) are at risk for exposure to and possible transmission of vaccine-preventable diseases. Maintenance of immunity is, therefore, an essential part of prevention and infection control programs for healthcare workers. Optimal use of immunizations through consistent immunization programs

safeguards the health of workers and protects patients from becoming infected through exposure from infected workers. In addition to healthcare workers in hospitals and health departments, these recommendations apply to those in private physicians' offices, nursing homes, schools, and laboratories, and to first responders.

The CDC's National Immunization Program (NIP) and its Advisory Committee on Immunization Practices (ACIP) provide general recommendations and technical guidance on immunizations. Immunization recommendations for healthcare workers, including emergency responders, are released by ACIP and the Hospital Infection Control Practices Advisory Committee (HICPAC). These recommendations can be accessed at: http://www.cdc.gov/ncidod/dhqp/hicpac_pubs.html

Regulations Concerning Worker Safety and Personal Protective Equipment (PPE)

The federal government is involved in regulating worker safety in many different ways. If you do not comply with the federal regulations, you risk subjecting your organization to liability.

The following list is a sampling of federal agencies and national organizations involved in worker safety:

- The Occupational Safety and Health Administration (OSHA - http://www.osha.gov) is most relevant and most important to this discussion. OSHA regulations will be discussed in more detail below;

- The National Fire Protection Association (NFPA - http://www.nfpa.org) plays a role in certifying personal protective equipment (PPE), as well as governing the management of hazardous materials sites;

- The Environmental Protection Agency (EPA - http://www.epa.gov) works with chemical hazards and the environment, and provides guidance for the disposal of chemical waste;

- The Department of Transportation (DOT - http://www.dot.gov) enforces regulations regarding the transport of hazardous materials, as transportation accidents are a common cause of hazardous materials incidents;

- The National Institute for Occupational Safety and Health (NIOSH - http://www.cdc.gov/niosh) plays a significant role in evaluating and certifying respirators; and

- The Joint Commission on Accreditation of Healthcare Organizations (JCAHO - http://www.jcaho.org) provides guidelines specific to healthcare workers regarding workplace hazards.

TABLE 2.
Guidelines for Infection Control[1,2]

Type of Precaution	Types of Exposures	Situations/Illnesses	Typical Control Measures
Standard Reduces the risk of transmission of pathogens in blood and other moist body substances	• Blood • All bodily fluids • Secretions and excretions except sweat • Non-intact skin • Mucous membranes	Generally applies to all patient contact (also known as "Universal Precautions")	• Handwashing – after glove removal, between patient contacts, as necessary to avoid transfer of microorganisms. • Gloves – wear them. Change between tasks. • Mask & Eye/Face Protection – wear a mask and face shield during activities likely to generate splashes or sprays. • Gown – wear during activities likely to generate splashes or sprays. • Equipment - Ensure adequate cleaning of re-usable equipment and supplies. • Linen – handle, transport and process in a manner that avoids contamination of other people and environments. • Prevent needlestick and other injuries by following occupational health and blood-borne pathogen control procedures. • Place patients who contaminate the environment or who cannot maintain appropriate hygiene in a private room.
Contact Reduces the risk of epidemiologically transmission of important microorganisms by direct or indirect contact	• Physical contact with patient • Patient-to-patient contact • From contact with contaminated objects	Applies to specified patients known or suspected to be infected or colonized with particular microorganisms (e.g., MRSA)	Standard precautions PLUS: • Private room or cohort • Expanded glove use • Wear a gown • Limit patient transfer or movement – if necessary, ensure heightened precautions • Use dedicated or single use patient-care equipment • May have special equipment cleaning recommendations
Droplet Reduces the risk of large-particle droplet transmission.	Close exposure (within 3 feet) to infectious patient who coughs, sneezes, or talks, or during certain procedures (e.g., suctioning, bronchoscopy, etc.)	Organisms known to be contagious via droplet include influenza, diphtheria, pertussis, pneumonic plague, etc.	Standard precautions PLUS: • Private room or cohort • Maintain separation of at least 3 feet between other patients and visitors • Wear a mask when working within 3 ft of the patient or in the same room • Limit patient transfer or movement – if necessary, have patient wear a mask
Airborne Reduces the risk of small-particle airborne transmission of infectious agents	Airborne transmission can lead to wide dispersal of the infectious agent – outside the room, down the hall, with the ventilation system airflow, etc.	Organisms known to be potentially contagious via airborne include measles, chickenpox, pulmonary tuberculosis, possibly SARS, etc.	Standard precautions PLUS: • Private room with negative air pressure and at least 10 - 12 air changes per hour • Keep door to patient's room closed and patient's movement should be restricted • Wear fit-tested N-95 mask • Persons susceptible to organisms such as measles and chickenpox should avoid exposure if other immune caregivers are available.

OSHA Regulatory Guidance

OSHA sets safety standards that apply to any workers in the United States who may be exposed to a safety or health hazard. The most relevant legislation promulgated by OSHA is Section 1910.120 of Volume 29 of the Code of Federal Regulations (OSHA 29 CFR 1910.120). This regulation sets standards for hazardous waste operations and emergency response, and is known by the nickname, "HAZWOPER."

This regulation dictates training and PPE required for workers on the site of an incident involving hazardous materials.

This regulation specifies the following levels of training:

- **Awareness Level** training is intended for any workers who may be exposed to hazards, to empower them to identify a hazardous incident and request help;

- **Operations Level** training is intended for workers who are expected to contain a hazard incident, but not stop it or provide clean up;

- **Technician Level** training is intended for workers who are expected to aggressively stop the release of a hazardous substance and/or clean up an incident.

- **Specialist Level** training is intended for workers who are expected to have expert chemical knowledge; and

- **Incident Commander** training is intended for incident commanders to understand the risks and challenges of responding to a hazardous incident.

Persons potentially covered by this standard include: public first-responders (fire, police, EMS); private employees who are expected to respond to the scene of an incident (Hazardous Waste Operation); and state and local government employees (via OSHA-approved state plans).

Past studies have found that because as many as eighty percent of victims from a mass incident will self-present to the hospital, hospitals are vulnerable to the possibility of contamination from patients.

Selecting the Appropriate Personal Protective Equipment (PPE) for Infectious Agents

The infectiousness of the agent, its contagiousness, and the route of transmission determine the type of PPE needed.

In a hospital setting, the Joint Commission on Accreditation of Healthcare Organizations already requires that universal precautions be taken when treating all patients. This means that gloves must

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Indentifying Hazards

- **Health Hazard**
  Refers to any substance – chemical, radiological, or biological - that may endanger human health or safety.

- **Immediately Dangerous to Life or Health (IDLH)**
  This label is given when the concentration of a substance is such that death or serious injury may occur immediately. For any substance rated as IDLH, the only priority is to evacuate.

- **Permissible Exposure Limit**
  This is the maximum exposure level to a specific substance as allowed by OSHA regulations. It defines the length of time that one can be in a hazardous environment and experience cumulative exposure before he/she must evacuate.

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always be worn to protect against exposure to blood or other fluids. Gowns, respiratory protection, and eye protection must be worn when there is the threat of a splash or a contact agent.

Criteria for Selecting Respirators

For most airborne biological agents, a properly fitted N-95 mask is adequate, or a powered air purifying respirator (PAPR) if not fitted for an N-95 mask.

Under some circumstances additional respiratory protection may be needed. NIOSH issues recommendations for respirator use. Industrial type approvals are in accordance with the NIOSH federal respiratory regulation 42 CFR Part 84. Respirator standards are developed in concert with various partners from government and industry. NIOSH has also developed respirator selection logic to help in respirator selection. That logic may be obtained from the following web site: http://www.cdc.gov/niosh/docs/2005-100/default.html

Criteria for Selecting Protective Clothing

Selecting the proper PPE depends upon the hazard. Different PPE is necessary for biological, radiological, and chemical events. Furthermore, the specifics of the hazard dictate the level of PPE that is necessary. OSHA has identified on their website guidelines for selection of PPE: http://www.osha-slc.gov/dts/osta/otm/otm_viii/otm_viii_1.html

Resources Related to Worker Safety and Personal Protective Equipment (PPE) for Chemical and Radiological Hazards

Information contained within this chapter relates to biological hazards. For chemical and radiological hazards the following resources may be useful:

- **Agency for Toxic Substances and Disease Registry (ATSDR)** - Lead federal agency responding to chemical incidents.

  http://www.atsdr.cdc.gov or Call 404-498-0120

- **CHEMTREC** - Private organization that can provide 24/7 emergency response information on chemical agents.

  http://www.chemtrec.org or Call 800-424-9300

- **Emergency Response Guidebook (ERG)** – Joint effort between U.S. Department of Transportation and sister agencies in Canada and Mexico.

  - Guide for first responders to: (1) quickly identify the specific or generic classification of material(s) involved in the incident; and (2) protect themselves and the general public during this initial response phase of the incident.

  http://www.hazmat.dot.gov/pubs/erg/gydebook.html

- **CDC National Institute for Occupational Safety and Health** - Agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness.

  http://www.cdc.gov/niosh/homepage.html

  - NIOSH Pocket Guide to Hazardous Chemicals; includes key information regarding 677. industrial chemicals.
  http://www.cdc.gov/niosh/npg/

  - National Personal Protective Technology Laboratory
  http://www.cdc.gov/niosh/npptl/default.html

- **National Response Center (NRC)** - Federal government's national communications center, which is staffed 24-hours a day by U.S. Coast Guard officers and marine science technicians. The NRC receives all reports of releases involving hazardous substances and oil that trigger federal notification requirements under several laws.

  http://www.nrc.uscg.mil/nrchp.html
  or Call 800-424-8802

- **Occupational Safety and Health Administration** – Agency responsible for assuring the safety and health of America's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health.
  http://www.osha.gov

Making Plans to Protect Your Family and Others

Although emergency first responders may be well trained in preparedness and response to disasters in the community, it is equally important to prepare our families and homes for the unexpected. As with professional disaster planning, family/home disaster planning includes assessing threats, creating evacuation and communications plans, building disaster supplies kits, and practicing.

The guidance below is largely adapted from the U.S. Department of Homeland Security (http://www.ready.gov) and the American Red Cross (http://www.redcross.org)

Assessing Threats
Contact your American Red Cross (ARC) or local emergency management agency (EMA) to help determine:

1. The types of disasters, both natural and man-made, most likely to occur in your neighborhood or town. Request information on how to best prepare for and respond to each;

2. Learn about your community's radio, television, and siren warning signals - what they sound like and what you and your family should do when you hear them;

3. Consider animal care after a disaster. Animals may not be allowed inside emergency shelters due to local policies and/or health regulations; and

4. Consider special needs of elderly, disabled, and other special populations.

Creating Plans
Before creating evacuation and communications plans for your family, you may want to inquire about site-specific emergency plans at places where your family spends time - work, the neighborhood, school, and daycare. If no plans exist, consider volunteering to create one.

Employers
Make sure your workplace has a building evacuation plan that is regularly practiced. Work with your employers to:

- Take a critical look at your heating, ventilation and air conditioning system to determine if it is secure or if it could feasibly be upgraded to better filter potential contaminants, and be sure you know how to turn it off should it be necessary;

- Think about what to do if your employees can't go home; and

- Make sure you have appropriate supplies on hand.

For more information on specific building threats, see "Protecting Building Environments from Airborne Chemical, Biological, or Radiological Attacks" from the National Institute for Occupational Safety and Health at:
http://www.cdc.gov/niosh/bldvent/2002-139.html.

Neighborhoods and Apartment Buildings

- Talk to your neighbors about how you can work together during an emergency.

- Find out if anyone has specialized equipment such as a power generator, or special expertise that might help in a crisis.

- Decide who will check on elderly or disabled neighbors.

- Make back-up plans for children and pets in case you can't get home in an emergency.

- Share plans and communicate in advance.

Schools and Daycare

If you are a parent, or guardian of an elderly or disabled adult, make sure schools and daycare providers have emergency response plans.

- Ask how they will communicate with families during a crisis.

- Ask if they store adequate food, water and other basic supplies.

- Find out if they are prepared to "shelter-in-place" if needed, and to where they plan to evacuate if necessary.

For more information on developing emergency preparedness plans for schools, please visit the U.S. Department of Education at:
http://www.ed.gov/admins/lead/safety/emergencyplan/index.html

The Pennsylvania Emergency Management Agency (PEMA) also has tool kits for school and daycare planning, available at:
http://www.pema.state.pa.us/

Family Disaster Plan

Sit down with your family as often as necessary to discuss the types of disasters that are most likely to occur. Clearly explain the dangers of fire and severe weather (such as thunderstorms, tornadoes, and hurricanes) to children. Make sure to share responsibilities as appropriate in order to work together as a team.

- Explain what to do in specific emergencies such fire, power outage, natural disaster, etc.

- Pick at least two places to meet (be specific):

  - Right outside your home in case of a sudden emergency, such as a fire.

  - A preset location outside your neighborhood in case you cannot return home. Everyone must know the address and telephone number.

- Ask an out-of-state friend or relative to be your "family contact." After a disaster, it is often easier to call long distance than locally. Other family members should call this person and tell him/her where they are and how they are doing. **Everyone must know your contact's telephone number!**

- Discuss what to do in an evacuation. Plan how to take care of your pets.

Evacuation Plan

It is the responsibility of local government, not the Red Cross or the federal government to issue evacuation orders when disaster threatens or occurs. Listen to local radio and television reports when an emergency situation may be occurring in your area. If local officials ask you to leave, do so immediately - they have a good reason for making this request. If you need to stay as a requirement of your professional duty, make arrangements to evacuate your family and pets as appropriate.

Coordinate your evacuation plan in advance when creating your family's disaster plan. Ensure that you have tested the evacuation routes and that you have planned alternatives should roads and routes be closed.

If there is a chance the weather may get worse or flooding may occur, and local officials have not yet advised an immediate evacuation, take steps now to protect your home and belongings. Do this only if local officials have not asked you to leave.

Gather essential supplies and papers:
You will need the following supplies when you leave your home – put them all together in a duffle bag or other large container in advance. The list below is your disaster supply kit:

- Flashlight with plenty of extra batteries.
- Battery-powered radio with extra batteries.
- First-aid kit.
- Prescription medications in their original bottle, plus copies of the prescriptions.
- Eyeglasses (with a copy of the prescription).
- Water (at least one gallon per person is recommended; more is better).
- Foods that do not require refrigeration or cooking.
- Items that infants and elderly household members may require.

- Medical equipment and devices, such as dentures, crutches, prostheses, etc.
- Change of clothes for each household member.
- Sleeping bag or bedroll and pillow for each household member.
- Checkbook, cash, and credit cards.
- Map of the area.

Important papers to take with you:
- Driver's license or personal identification.
- Social Security card.
- Proof of residence (deed or lease).
- Insurance policies.
- Birth and marriage certificates.
- Stocks, bonds, and other negotiable certificates.
- Wills, deeds, and copies of recent tax returns.

Practice Your Plan

Just as you drill and exercise your plans in your emergency response roles, it is vital to practice your family disaster plans. At minimum, engage your entire family in these steps:

- Test your smoke detectors monthly and change the batteries at least once a year;

- Quiz children every six months so they remember necessary actions;

- Conduct fire and emergency evacuation drills;

- Practice your emergency communications plan by having your family members actually make the calls to your out-of-state friends or relatives to assure that all numbers are current and that they are aware that they are an important part of your family's plan;

- Replace stored water every three months and stored food every six months; and

- Test and recharge your fire extinguisher(s) according to manufacturer's instructions.

Special Considerations for People with Disabilities

- Contact the local emergency management office. Many maintain registers of people with disabilities so they can be located and assisted quickly in a disaster.

- Wear medical alert tags or bracelets to identify specific disability in case of an emergency.

- Know the location and availability of more than one facility if dependent on a dialysis machine or other life-sustaining equipment or treatment.

- For severe speech, language, or hearing disabilities, tap space bar to indicate TDD call when dialing 911 and store a writing pad and pencils to communicate with others.

- Keep a flashlight handy to signal whereabouts to other people and for illumination to aid in communication.

- Engage social network to assist in notification of warnings or emergency instructions. Ask them to be a source of emergency information as it comes over their radio.

- Recognize that assistive animals such as seeing eye dogs and hearing ear dogs may become confused or disoriented in an emergency. Store extra food, water and supplies for assistive animals.

- People with disabilities have the same choices as other community residents about whether to evacuate their homes and where to go when an emergency threatens. Listen to the advice of local officials. Decide whether it is better to leave the area, stay with a friend or go to a public shelter. Each of these decisions requires planning and preparation.

- If using a wheelchair, show individuals within support network how to operate the wheelchair if necessary. Make sure they know the size of the wheelchair in case it has to be transported.

American Red Cross Resources

For more detailed information on family evacuation planning, including recommended clothing, medication and other supplies, safety tips, and actions to protect your home and your valuables, please visit the American Red Cross at: http://www.redcross.org/services/prepare/0,1082,0_91_,00.html

For a comprehensive list of what should be included in a family disaster kit, including additional information on water sources and food supplies during an emergency, please visit the American Red Cross at: http://www.redcross.org/services/prepare/0,1082,0_91_,00.html

Additionally, The American Red Cross & CDC have teamed up to answer common questions & provide guidance on steps you can take now to protect you and your loved ones. Included in this guide called "Preparedness Today: What You Need To Do" is guidance on food and water, disaster supplies, shelter-in-place, quarantine and isolation, and tools for maintaining a healthy state of mind through terrorism and disasters for all age groups. This resource can be accessed at: http://www.redcross.org/preparedness/cdc_english/CDC.asp

ADDITIONAL FAMILY DISASTER PREPAREDNESS TIPS*

Complete this checklist:

❑ Post Emergency Telephone numbers by phones (fire, police, ambulance, etc.).

❑ Teach children how and when to call 911 or your local Emergency Medical Services number for emergency help.

❑ Show each family member how and when to turn off the water, gas and electricity at the main valves and switches.

❑ Check to make sure you have adequate insurance coverage.

❑ Teach each family member how to use the fire extinguisher (ABC type), and show them where it's kept.

❑ Install smoke detectors on each level of your home, especially near bedrooms.

❑ Conduct a home hazard hunt.

❑ Stock emergency supplies and assemble a Disaster Supplies Kit.

❑ Take a Red Cross first aid and CPR class.

❑ Determine the best escape routes from your home. Find TWO ways out of each room.

❑ Find the safe spots in your home for each type of disaster.

*The American National Red Cross (2005). *Prepare at Home: Prepare Your Family for Disasters.* Available online: http://www.redcross.org/services/prepare/0,1082,0_91_,00.html

Chapter 7: Post-Test

1. The number one principle is that in every incident, _____ is primary, and everything else you do is secondary.
    a. heroism
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    a. FEMA (Federal Emergency Management Agency)
    b. OSHA (Occupational Safety and Health Administration)
    c. CDC (Centers for Disease Control and Prevention)

3. Name five of the essential supplies that must be in your family disaster kit.
    a.
    b.
    c.
    d.
    e.

References: Chapter 7

1 Adapted from CDC *"Guidelines for Isolation Precautions in Hospitals"* at http://www.cdc.gov/ncidod/dhqp/gl_isolation_tableI.html

2 Please be aware that these recommendations change over time — be aware of any updates.

Appendix A - Who to Contact

IMPORTANT CONTACT INFORMATION - IN AN EMERGENCY ALWAYS CALL 911

Tip Submission—Please report criminal/terrorist tips immediately to:
1-888-292-1919 or email sp-intelligence@state.pa.us.

Pennsylvania Homeland Security
www.homelandsecurity.state.pa.us

Pennsylvania Department of Health
1-877-PA-HEALTH
www.health.state.pa.us

Pennsylvania Emergency Management Agency
www.pema.state.pa.us

Pennsylvania Poison Control Centers
1-800-222-1222

American Red Cross
1-800-435-7669
www.redcross.org

American Trauma Society
1-717-766-1616

For more information on local emergency management planning in your Pennsylvania County call:

Adams County 717-334-8603	Crawford County 814-724-2548	Lehigh County 610-782-3073	Sullivan County 570-946-5010	Washington County 724-228-6911
Allegheny County 412-473-2550	Cumberland County 717-240-6400	Luzerne County 570-820-4400	Susquehanna County 570-278-4600 x 250	Wayne County 570-253-1622
Armstrong County 724-548-3431	Dauphin County 717-558-6800	Lycoming County 800-433-9063	Tioga County 570-724-9110	Westmoreland County 724-600-7358
Beaver County 724-774-1049	Delaware County 610-565-8700	McKean County 814-887-5070	Union County 570-523-3201	Wyoming County 570-836-2828
Bedford County 814-623-9528	Elk County 814-776-5314	Mercer County 724-662-6100	Venango County 814-677-7356	York County 717-840-7494
Berks County 610-374-4800	Erie County 814-870-9920	Mifflin County 717-248-9645/9607	Warren County 814-723-8478	
Blair County 814-940-5906	Fayette County 724-430-1277	Monroe County 570-992-4113		
Bradford County 570-265-5022	Forest County 814-755-3541	Montgomery County 610-631-6530		
Bucks County 215-340-8700	Franklin County 717-264-2813	Montour County 570-271-3047		
Butler County 724-284-5211	Fulton County 717-485-3201	Northampton County 610-759-2600		
Cambria County 814-472-2050	Greene County 724-627-5387	NorthumberlandCounty 570-988-4217/4218		
Cameron County 814-486-1137 x 352	Huntingdon County 814-643-6613/6617	Perry County 717-582-2131 x 256		
Carbon County 570-325-3097	Indiana County 724-349-9300	Philadelphia County 215-686-1104/1100		
Centre County 814-355-6745	Jefferson County 814-849-5052	Pike County 570-296-6714		
Chester County 610-344-5000	Juniata County 717-436-2181	Pittsburgh, City of 412-255-2293		
Clarion County 814-226-6631	Lackawanna County 570-961-5511	Potter County 814-274-8900		
Clearfield County 814-765-5357	Lancaster County 717-664-1200	Schuylkill County 570-622-3739		
Clinton County 570-893-4090	Lawrence County 724-658-7485	Snyder County 570-372-0826		
Columbia County 570-389-5720	Lebanon County 717-272-7621	Somerset County 814-445-1515/16		

Pennsylvania's public health network consists of 57 State Health Centers and 10 County and Municipal Health Departments. For public health preparedness information, call your designated health department listed below or otherwise, call 1-877-PA-HEALTH.

Allegheny County Health Department
412-578-8026

Allentown Bureau of Health
610-437-7760

Bethlehem Health Bureau
610-865-7087

Bucks County Department of Health
215-345-3318

Chester County Health Department
610-344-6225

Erie County Department of Health
814-451-6700

Montgomery County Health Department
610-278-5117

Philadelphia Department of Public Health
215-685-5670

Wilkes-Barre City Health Department
570-208-4268

York City Bureau of Health
717-849-2252

Appendix B - Test Answer Key

Chapter One
1. September 11, 2001 Terrorist Attacks (hijacking and crash of commercial airline in Somerset County); 1889 Johnstown Flood; 1911 Austin Dam Failure
2. d
3. c
4. b

Chapter Two
1. b
2. c
3. b

Chapter Three
1. a
2. d
3. b

Chapter Four
1. a
2. a
3. b

Chapter Five
1. b
2. b
3. a

Chapter Six
1. b
2. Exhaustion; depression; hostility; loss of empathy and sympathy for victims; dread of new encounters; guilt; helplessness; and isolation
3. c

Chapter Seven
1. c
2. b
3. Flashlight with plenty of extra batteries;
   Battery-powered radio with extra batteries;
   First-aid kit;
   Prescription medications in their original bottle, plus copies of the prescriptions;
   Eyeglasses (with a copy of the prescription);
   Water (at least one gallon per person is recommended; more is better);
   Foods that do not require refrigeration or cooking;
   Items that infants and elderly household members may require;
   Medical equipment and devices, such as dentures, crutches, prostheses, etc.;
   Change of clothes for each household member;
   Sleeping bag or bedroll and pillow for each household member;
   Checkbook, cash, and credit cards; Map of the area.