



Mass Gatherings: Are You Prepared?

About the Print Version

The print version of the course includes all the substantive content from each screen, except for the directions for the interactive graphics. It does not include the Check Your Understanding exercises, the final exercise, or the practice scenario. The toolkit, which is referenced throughout the course, is available online.

Mass Gatherings

Masters of Rock, a hypothetical three-day music festival, will be playing at large campground a few miles from your town. Organizers expect between 35,000 and 50,000 people to attend. Your town's population is 2,000. In addition to several stages, there will be artists' booths and food vendors. The attendees will camp at the site.

What would happen if on the second day, dozens of people complain of stomach cramps and diarrhea? Would the first-aid facility be able to accommodate and treat them? What if health care workers at the first-aid facility start sending people to the emergency room at the hospital in town? If temperatures rise to the upper 80s, would there be enough water to keep people hydrated? Finally, how does public health and the event organizers coordinate and keep staff and the public informed about these ongoing health risks?

We will use this hypothetical music festival throughout the module to help you think through planning for a mass gathering. This information is applicable to other mass gatherings.



What Is a Mass Gathering?

On any given day, events take place that attract crowds large and small at various types of venues. But what do we consider a mass gathering? And what is the role of public health in preparing for mass gatherings?

In this module, we define a mass gathering as a **preplanned event** held at a **specific location** for a **defined period of time** that **strains planning and response resources**.

While this module emphasizes preplanned mass gatherings, they can also be spontaneous, such as the gathering of mourners associated with the death of a famous or important person, such as the Pope or a President.

Examples of mass gatherings include:



Rock concerts



Sporting events (Olympics, NASCAR, Super Bowl, rodeos)



Fairs and festivals (county and state fairs, summer art and craft fairs, music festivals)



Conventions and conferences



Political rallies



Religious gatherings (Papal mass, World Youth Day, pilgrimage to Mecca)

Size and Duration

Different events may qualify as mass gatherings depending on local capacity to respond to that event. A homecoming parade with 1,000 spectators may be considered a mass gathering in a small town but not in a major metropolitan area. Some people define a mass gathering as having more than 5,000 attendees. Nevertheless, any event with more than 25,000 attendees is considered a mass gathering.

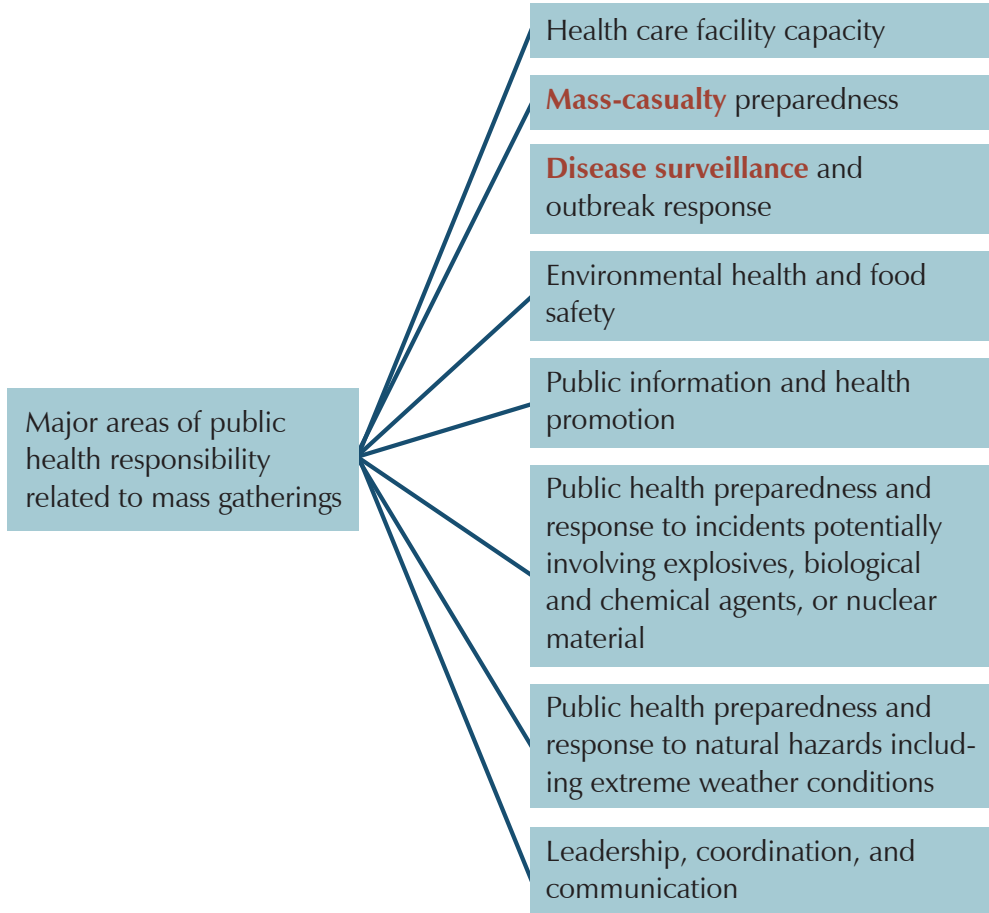
Mass gatherings can occur over different periods of time. Some last just a few hours, like a rock concert. Others are one-day events, such as the Super Bowl. Still others extend over a period of days or weeks, such as a county fair or an international sporting or trade show event.

Role of Public Health

Mass gatherings pose special challenges for health systems. The incidence of illness and injury at mass gatherings is usually higher than you would normally see in a population of comparable size. Even if your community's existing health system can adequately deal with regular levels of disease (including an occasional disease outbreak), the greater number of people associated with mass gatherings can place a severe strain on the health care system. When health systems are overwhelmed, the ability to detect, investigate, and respond to a problem is compromised.



The goal for public health at mass gatherings is to prevent or minimize the risk of injury or ill health and maximize safety for participants, spectators, event staff and volunteers, and residents.



Mass casualty: A large number of people injured or dead in a relatively short period of time, usually as the result of a single incident that exceeds local logistical support capabilities.

Surveillance: The systematic collection, analysis, interpretation, and dissemination of health data on an ongoing basis, to gain knowledge of the pattern of disease occurrence and potential in a community, in order to control and prevent disease in the community.

Some of these areas of responsibility may be carried out by other sectors. For your local health jurisdiction, refer to your County Emergency Management Plan.

Preparing

Reducing public health risks and ensuring people’s safety at mass gatherings requires thorough planning and coordination. Think about preparing for mass gatherings along three broad themes: risk assessment, surveillance, and response.

Risk assessment	What might happen?
Surveillance	How will we know when it happens?
Response	What will we do when it happens?

Follow-up after a mass gathering is just as important as planning for the event itself. Debriefing meetings and documentation of the event in an After Action

Report will identify what went well and what could be improved for the next mass gathering.

It is important that you establish excellent **coordination** and **communications devices** to make sure everyone understands their roles and responsibilities. We'll talk more about coordination and communication later in the module.

Partnerships

Getting involved early when preparing for a mass gathering will help guarantee that public health considerations are factored into the entire planning process instead of being brought in as an afterthought. Generally, public health officials rely on event organizers to alert them about upcoming mass gatherings. Local health departments often find out about upcoming mass gatherings when law enforcement, emergency medical services, or the fire department is notified.

A mass gathering requires the coordination of a vast array of organizations, agencies, services, and resources. You might interact with a range of government and non-government agencies in a variety of sectors. Depending on the scope of the event, these agencies may be limited to just the local level, or they may include regional, state, and national levels.



Public Health Partners

Coordinating within public health is challenging because responsibilities often overlap. You should develop a framework for public health's planning efforts for the mass gathering to ensure a common vision, consistent leadership, strategic direction, and technical coordination.

Example framework for public health planning for a mass gathering*

**adapted from the World Health Organization*



Your planning structure may differ depending on each situation and the size of your local health jurisdiction. Whatever framework you adopt, make sure individual group plans are not developed in isolation but rather in conjunction with all the groups. To facilitate this, each group should have at least one representative on the steering committee.

Outside Agencies

Planning for mass gatherings is a multi-agency, cross-disciplinary process. In addition to coordinating within public health, you will also need to work with other agencies so that you can respond rapidly and effectively to any emerging situations during a mass gathering.

Consider involving the groups listed below on your planning committees.

Entities to consider involving in planning/control committees

Event organizers	Local government
Hospitals	ER physicians
Infectious disease practitioners	Laboratories/pathologists
Emergency medical services	Mortuary services
Legal bodies	Fire services
Law enforcement	Security services
Military	Environmental agencies
Chemical & radiological experts	Food safety experts
Communications/media	

Part of coordinating with outside agencies is that you will need to integrate health-related planning with the overall planning for the mass gathering. This will allow for a more streamlined response to any public health incidents that may occur.

Summary

A mass gathering is defined as a preplanned public event held at a specific location for a defined period of time that strains planning and response resources. The goal for public health at mass gatherings is to prevent or minimize the risk of injury or ill health and maximize safety for participants, spectators, event staff and volunteers, and residents. You can achieve this through careful risk assessment, surveillance, and response. Partnering with other agencies and groups will facilitate your planning process.

The rest of the module will cover **risk assessment, surveillance, health response, coordination, and communication**. Links to more in-depth information and some of the areas not covered in this module are included in the toolkit.



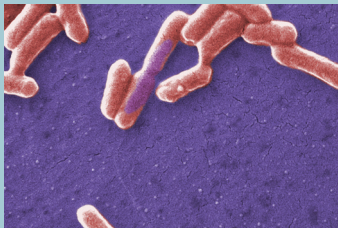
Risk Assessment

Different types of mass gatherings may pose very different public health threats. Mass gatherings can cause an increase in the level of existing risks, or they can pose entirely new risks. Knowledge of the kinds of problems that may be seen is important to planning emergency services and health care.

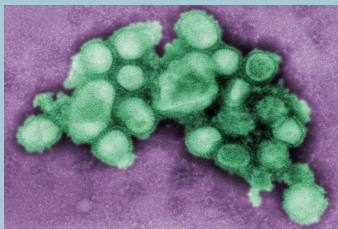
Major anticipated health risks during mass gatherings include:



Heat- or cold-related illness



Foodborne and waterborne illness



Communicable diseases



Accidents and injuries



Illness, injuries, and panic related to intentional explosive, biological, or chemical attacks



Natural events (electrical storms, earthquakes, floods, hurricanes)

An outdoor music festival on a hot day may result in numerous cases of heat exhaustion. Food stands at county fairs increase the opportunity for foodborne illness outbreaks. And big crowds mean communicable diseases like influenza or meningitis spread more easily. Temporary structures, like grandstands, can also cause injuries if they malfunction.

Common Risks

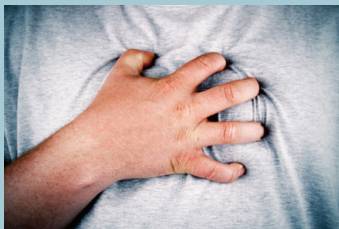
The most common medical problems seen at mass gatherings include:



Traumatic injuries (cuts, scrapes, bruises, sprains, fractures)



Gastrointestinal problems (nausea, vomiting, diarrhea, stomach cramps)



Heart problems (chest pain, light-headedness, loss of consciousness)

On rare occasions mass gatherings result in a high number of injuries and deaths. At the 2006 Hajj in Mecca, Saudi Arabia, a crowd stampede caused 346 deaths and at least 289 injuries. An explosion at the 1996 Summer Olympic Games in Atlanta killed 1 person and injured 111 people.



What Would You Do?

The newly elected mayor is planning to hold a parade in your downtown area. The parade would include a marching band, floats, and baton twirlers. Because the temperatures have been below freezing during the day, the organizers have asked for your recommendation about whether they should still hold the parade outside. You are concerned about the baton twirlers' outfits not providing them enough warmth during the parade. What do you recommend?

- Hold the parade. The baton twirlers will be active enough to stay warm.
- Cancel the parade. The temperature is too cold and you can't guarantee the health of the twirlers.

What They Did

At the 1980 inauguration of Ronald Reagan, organizers asked public health officials at the Centers for Disease Control and Prevention whether they should have a parade, given the cold temperatures. The public health officials recommended against having the parade, because they couldn't ensure that the baton twirlers wouldn't get frostbite or hypothermia. The organizers decided to hold the event inside a nearby Armory.

What Is Risk Assessment?

If you are asked to help plan for a mass gathering in your capacity as a public health professional, you will need to start by conducting a risk assessment. A risk assessment involves:

1 Identifying the **health issues** that could pose a risk to the gathering

2 Assessing **likelihood of occurrence** and **seriousness** to the community

3 Determining strategies to **reduce the risks** or to manage them if they arise

Risk assessment is a continuous process that should start before the mass gathering begins and continue after the event is over. In addition to identifying potential health risks that may arise during the mass gathering, you also need to be ready to do a rapid risk assessment or change if a risk factor occurs.

Risk Assessment Partners

Planning for a mass gathering involves several public and private agencies. No single organization has the resources or information to handle all of the public health requirements of mass gatherings. In fact, planning for mass gatherings can forge non-traditional partnerships among public health agencies, law enforcement, and the intelligence community.

When conducting your risk assessment, look back at the groups you decided would be important to include in your planning committees. Although who you ultimately partner with will depend on the final outcomes of the risk assessment, you can probably anticipate the major health risks, which will suggest who to partner with in the risk assessment process.

For example, foodborne illness is likely to be a fairly significant risk at Masters of Rock, but it would not be at a political rally where no food will be offered. This means it would be critical to engage food safety experts in the risk assessment for the music festival, but not for the political rally.

Step 1. Identify Risks

If you are planning for a mass gathering, like Masters of Rock, how do you know which health risks are most likely to happen? This table can help you think through the factors at each event that influence potential health risks.

You can find additional information about classifying crowd type and risk assessment forms in the toolkit.

Factor	Considerations
Weather	Heat exposure Cold exposure Lightning Precipitation
Attendance	Crowd size Staffing (paid and volunteer)
Duration of event	Extended exposure Increased exhaustion
Type of event	Outdoor vs. indoor Seated vs. mobile
Crowd mood	Music type (such as rock vs. classical concert) Team rivalry Confrontation (such as protests, political rallies)
Crowd type	Behavior and judgment Frailty/vulnerability Large numbers of people with a specific health condition (such as cancer walks) International visitors
Crowd density	Increased exposure to microbes Effects on mood Decreased access to patients Decreased access to water, bathrooms
Alcohol and drugs	Physiologic effects Decreased judgment Increased violence Binge drinking at the gate

Sources of Information

You should use a variety of sources to collect information about potential health risks. Your risk assessment partners will be instrumental in providing information about specific health considerations.

You should also consult several different types of routine surveillance data to help inform your risk assessment process. For example:



Weather surveillance: Meteorological reports will help you figure out if heat and cold exposures or other weather factors are likely to affect your event.



Air quality surveillance: The daily air quality health index will help you determine if the general population or at-risk populations need to be concerned about restricting their activity levels. This is especially important if your event will be held outdoors.



Water source surveillance: Keeping tabs on local water quality reports will help you anticipate any potential drinking water contamination issues before or during the event.



Food facility inspections: Consult the food facility inspection agency in your community to determine if any local restaurants or cafes are not in compliance or if any recent outbreaks have been detected. These reports will also provide important information to you about compliance among temporary food establishments during the event.



Terror surveillance: As a public health practitioner, you probably will not have direct access to terror surveillance. However, you can establish partnerships with the intelligence community to determine whether intentional acts are likely to affect your event.

Identify Intentional Acts

The potentially catastrophic consequences of intentional attacks that use explosives or biological, chemical, or radionuclear weapons, must be considered in planning and risk assessment. However, this topic should not dominate the process for public health planning. The risk of such an event generally ranks low compared to the many other public health risks at mass gatherings.

How do you know if terrorist attacks are likely to threaten your mass gathering?

- How highly publicized is the event? Will it attract a lot of media attention?
- How long is the event? Short-term large mass gatherings can result in significant spread of communicable disease in the general population because people leave after being exposed but before symptoms occur. This makes them a target for bioterrorism.
- Is the event political in nature or are politically important people attending?

It is important that you have access to timely and accurate pre-event information in order to assess the potential risk intentional acts pose to your event. Coordinate closely with local law enforcement officials to assess the likelihood of intentional acts.

Categorize Health Risks

When identifying the potential health risks to your mass gathering, it may be useful to categorize them according to their cause—infectious diseases, non-infectious illnesses, and physical injury and trauma.

Potential public health risks identified for Masters of Rock

Risk Category	Health Risk
Infectious diseases	<p>Gastrointestinal illnesses</p> <p>Respiratory illnesses</p> <p>Febrile rash illnesses</p> <p>Deliberate use of biological agents</p>
Non-infectious causes	<p>Heat- or cold-related illness</p> <p>Alcohol-related illness and injury</p> <p>Drug- and toxin-related illness and injury</p> <p>Animal and insect bites</p> <p>Allergic reactions</p> <p>Exacerbation of underlying medical conditions (diabetes, asthma)</p> <p>Deliberate use of chemical agents or radionuclear material</p>
Physical injury and trauma	<p>Crowd surges/trampling</p> <p>Lightning strikes</p> <p>Grandstand collapse</p> <p>Psychological conditions (panic attacks)</p>

You may find our tabletop exercise *Bioterrorist Attack on Food* helpful in planning for a potential intentional act.

Gastrointestinal illnesses include food and water-borne diseases, norovirus, and toxins.

Respiratory illnesses include influenza, TB, and pertussis.

Febrile rash illnesses include measles, mumps, chickenpox, or meningococcal diseases.

Step 2. Prioritize Risks

After you’ve identified potential health risks, the next step is to analyze how likely the risks are and what effect they will have if they occur.

This table of risk ratings can help you systematically analyze each risk. This will guide your decisions about how to prepare for each risk when you develop your response plans. Remember, this chart is just a tool to help you prioritize what risks to plan for. An unlikely or rare risk might rank high (3 or 4) because

the consequences are major or catastrophic. When planning, don't spend a lot of time on risks that have a very low likelihood of happening.

Risk Ratings Chart

Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
Certain	3	3	4	4	4
Likely	2	3	3	4	4
Moderate	1	2	3	4	4
Unlikely	1	1	2	3	4
Rare	1	1	2	3	3

Level of Risk	Recommended Action
4 = High	Action must be taken to reduce consequences or likelihood
3 = Significant	Some action must be taken
2 = Moderate	Specific monitoring or response procedures required
1 = Low	Managed by routine measures

Next we will show you step-by-step how to use this chart.

Set Likelihood Levels

To use the risk ratings chart, first set the level of likelihood for each of the risks you identified in Step 1 for the Masters of Rock Festival. Here's what the different levels mean:

Certain	Expected to occur. Happened frequently at past events.
Likely	Considerable opportunity to occur. Happened regularly at past events.
Moderate	Might occur. A few recorded incidents at past events.
Unlikely	Not expected to occur. No incidents recorded at past events.
Rare	Would require exceptional circumstances to occur.

Likelihood levels for Masters of Rock

Risk Category	Health Risk	Likelihood
Infectious diseases	Gastrointestinal illnesses	Likely
	Respiratory illnesses	Moderate
	Febrile rash illnesses	Moderate
	Deliberate use of biological agents	Rare
Non-infectious causes	Heat- or cold-related illness	Certain
	Alcohol-related illness and injury	Certain
	Drug- and toxin-related illness and injury	Likely
	Animal and insect bites	Moderate
	Allergic reactions	Unlikely
	Exacerbation of underlying medical conditions (diabetes, asthma)	Moderate
	Deliberate use of chemical agents or radionuclear material	Rare
Physical injury and trauma	Crowd surges/trampling	Moderate
	Lightning strikes	Unlikely
	Grandstand collapse	Unlikely
	Psychological conditions (panic attacks)	Rare

Set Consequences Levels

Next you should make informed judgments about the seriousness of the consequences to the community for each of the risks. Here’s what the different levels mean:

Catastrophic	Large numbers injured, several deaths. Extensive damage.
Major	Extensive illness/injuries and some deaths. Longer-term impacts.
Moderate	Treatment and hospital required, but no deaths. Possible environmental impact or financial loss.
Minor	Small number of illness/injuries, but no deaths. Short duration.
Insignificant	No injuries, illness, or deaths. Little or no damage.

Consequence levels for Masters of Rock

Risk Category	Health Risk	Likelihood	Consequences
Infectious diseases	Gastrointestinal illnesses	Likely	Minor
	Respiratory illnesses	Moderate	Minor
	Febrile rash illnesses	Moderate	Moderate
	Deliberate use of biological agents	Rare	Catastrophic
Non-infectious causes	Heat- or cold-related illness	Certain	Moderate
	Alcohol-related illness and injury	Certain	Moderate
	Drug- and toxin-related illness and injury	Likely	Moderate
	Animal and insect bites	Moderate	Minor
	Allergic reactions	Unlikely	Minor
	Exacerbation of underlying medical conditions (diabetes, asthma)	Moderate	Minor
	Deliberate use of chemical agents or radionuclear material	Rare	Catastrophic
Physical injury and trauma	Crowd surges/trampling	Moderate	Major
	Lightning strikes	Unlikely	Moderate
	Grandstand collapse	Unlikely	Major
	Psychological conditions (panic attacks)	Rare	Minor

Assign Risk Ratings

Now you can return to the Risk Ratings Chart to assign the appropriate risk rating to each health risk. In the risk assessment table for Masters of Rock, the risk of a gastrointestinal illness is a 3—it is likely to happen but the consequences are minor.

Risk ratings for potential public health risks at Masters of Rock Festival

Risk Category	Health Risk	Likelihood	Consequences	Risk Rating
Infectious diseases	Gastrointestinal illnesses	Likely	Minor	3
	Respiratory illnesses	Moderate	Minor	2
	Febrile rash illnesses	Moderate	Moderate	3
	Deliberate use of biological agents	Rare	Catastrophic	3
Non-infectious causes	Heat- or cold-related illness	Certain	Moderate	4
	Alcohol-related illness and injury	Certain	Moderate	4
	Drug- and toxin-related illness and injury	Likely	Moderate	3
	Animal and insect bites	Moderate	Minor	2
	Allergic reactions	Unlikely	Minor	1
	Exacerbation of underlying medical conditions (diabetes, asthma)	Moderate	Minor	2
	Deliberate use of chemical agents or radionuclear material	Rare	Catastrophic	3
Physical injury and trauma	Crowd surges/trampling	Moderate	Major	4
	Lightning strikes	Unlikely	Moderate	2
	Grandstand collapse	Unlikely	Major	3
	Psychological conditions (panic attacks)	Rare	Minor	1

In the health response section, we will explain how to use these risk ratings to develop appropriate risk management strategies.

Review and Refine

After completing the risk assessment, go back through and ask yourself: What if some of the assumptions in the risk assessment are wrong? What would be the impact, for example, if one of the low risks became a high risk? This might change the risk management strategy you develop later in this process.

Risk assessment is an iterative process. Your assessment document is a working document that you and your team continually refer to, update, and revise as the planning progresses and event unfolds. For example, as the event gets closer you may have a better idea of the weather conditions during the event and how that might affect weather-related illness. Or maybe a bomb threat is made the day before the event, which forces you to change the risk of intentional acts from low to high risk and triggers the appropriate response teams to be ready to respond.



Refining the risk assessment as the event progresses is valuable in assessing and monitoring specific incidents as they develop (for example, a disease outbreak), and essential in ensuring appropriate responses.

? What Would You Do?

Your city is hosting a marathon. The day of the event starts out at 70 degrees, and temperatures rise quickly to near 90 degrees. Do you shut down the marathon?

- Yes
- No

What They Did

At the 2007 Chicago marathon temperatures reached 88 degrees, so officials shut down the race after 3.5 hours. One runner died from heat-related causes, over 30 people were hospitalized, and 400 sought medical attention.

Officials at the 2007 Twin Cities marathon faced similar temperatures, but decided not to cancel the race. Instead, they issued weather warnings for a week, provided extra water, and medics monitored each runner every mile. Forty people went to the hospital and 250 sought medical attention.

Summary

Mass gatherings can pose significant risks for the public health and health care delivery systems. A structured risk assessment of the potential health risks associated with a specific mass gathering event will help mitigate any health problems. During the risk assessment process, it is important to partner with those individuals or entities that are likely to have expertise in the areas you think the greatest health risks will occur. A risk assessment for mass gatherings should be an iterative, ongoing process that repeats these two steps:

- Risk identification and
- Prioritizing risks.

Later in the module we will discuss how the risk assessment is used to plan risk response procedures.

Disease and Injury Surveillance

Mass gatherings increase public health risks. For example, infectious diseases can spread more quickly and extreme weather conditions can cause heat- or cold-related illnesses. To effectively deal with such problems, public health professionals must quickly detect issues and intervene to prevent further illness/



injury and death. Enhanced public health disease and injury surveillance at mass gatherings is key to your response.

If surveillance identifies an important event or significant trend (such as people complaining of diarrhea) during your mass gathering, you will need to conduct a rapid epidemiological or outbreak investigation.

In this section of the module, we will cover enhancing public health surveillance to address potential disease outbreaks or injuries that may arise at mass gatherings.

If you need more basic information about public health surveillance, please refer to the module *Introduction to Public Health Surveillance*.

? What Would You Do?

The International Olympic Committee is considering your city for the 2020 Olympics. The governor has asked you to prepare a plan for health surveillance to include in the Olympic bid. Under usual circumstances, your state conducts surveillance for a variety of diseases and health conditions. Disease reporting is done by physicians and other clinicians, laboratories, and hospitals. For an event as large as the Olympics you will need to enhance surveillance capabilities to adequately monitor trends. What would you propose?

- Increased laboratory surveillance.
- Monitoring system for emergency room visits at area hospitals.
- Integrate data from all surveillance systems.
- All of the above.

What They Did

At the 1996 Olympics in Atlanta, Georgia, public health officials used an enhanced surveillance system for health conditions that occurred outside of Olympic venues and did not involve members of the Olympic family. This system included increased laboratory surveillance and systems to monitor all emergency room visits at eight hospitals.

The Centers for Disease Control and Prevention also established a system to measure clinical visits in Olympic venues and at contract hospitals for Olympic athletes, official Olympic staff, and national delegations. Daily reporting from these sources and surveillance data from the surrounding area allowed officials to monitor disease trends.

Enhanced Disease and Injury Surveillance

Imagine that many attendees complain of an unknown gastrointestinal illness at the Masters of Rock Festival. How will you identify the cause and track the sick people?

- You are expecting 50,000 people per day at Masters of Rock. What surveillance systems are in place for diseases and injuries you identified in your risk assessment? Do new systems need to be set up or existing systems enhanced?
- Since Masters of Rock is only three days, you will have less time to analyze and report data. Do you need new systems for reporting and processing these reports? Are health care providers familiar with the diseases of concern and procedures for testing and reporting? You may need to enhance your surveillance system so that it is possible to review more data during the time frame of the event. Are there new sources of data or reporting sources you can use? What are the plans for analyzing data and reporting findings? Will extra staff be needed? If so, what skills are required?

Enhancing disease and injury surveillance will enable you to **rapidly identify public health concerns** during the mass gathering, to **communicate information** about them, and to **respond** to them. But what kind of surveillance should you use?

Types of Surveillance

If you are planning the Masters of Rock Festival, an initial step in enhancing your disease and injury surveillance systems is figuring out which type of surveillance you will need.

Advantages and disadvantages of surveillance systems for use in mass gatherings

Surveillance system	Collects and analyzes	Advantages	Disadvantages
Notifiable Disease Surveillance	Diseases that health care personnel are mandated to report (such as anthrax, giardia, Legionnaire’s disease)	<ul style="list-style-type: none"> • Public health and health care personnel familiar with this approach • Easily standardized 	<ul style="list-style-type: none"> • May not be sensitive enough to detect all conditions of relevance • Passive and subject to underreporting • May not be timely • Depends on a specific lab diagnosis which takes time and delays reporting
Sentinel Site Surveillance	Health data by institutions chosen based on their geographic location, medical specialty, and ability to accurately diagnose and report high quality health data	<ul style="list-style-type: none"> • May be more specific risks of interest • May be more efficient 	<ul style="list-style-type: none"> • Does not necessarily cover the entire at-risk population • May be more labor-intensive • Requires training
Injury Surveillance	Data about unintentional and intentional injuries	<ul style="list-style-type: none"> • Can tailor to specific risks of interest 	<ul style="list-style-type: none"> • Information may not be routinely collected, so additional resources may be needed

The toolkit has a complete list of guiding questions to help you assess which elements of your surveillance systems need enhancing. If your event will draw people from other countries, you should be familiar with the World Health Organization’s International Health Regulations.

Surveillance system	Collects and analyzes	Advantages	Disadvantages
Syndromic Surveillance	Health data systematically collected based on symptoms rather than confirmed diagnosis. Most often performed with electronic records, but manual paper systems are also an option.	<ul style="list-style-type: none"> • May detect disease outbreaks more quickly 	<ul style="list-style-type: none"> • Can be expensive and labor-intensive • May have poor specificity
Novel Surveillance	Health data collected using alternative methods, like text messaging, first aid station reports, pharmacy records, etc.	<ul style="list-style-type: none"> • May detect disease outbreaks more quickly • May be more specific for the mass gathering event 	<ul style="list-style-type: none"> • Can be labor-intensive • May not be sustainable
Laboratory Surveillance	Laboratory specimen results	<ul style="list-style-type: none"> • Public health and health care personnel familiar with this system • Easily standardized 	<ul style="list-style-type: none"> • Limited to laboratory tests ordered and laboratory diagnosis which takes time and delays reporting

Considerations

Depending on the size and the scope of the mass gathering, you may even need to use more than one of the previously mentioned surveillance methods. You will need to determine which surveillance system(s) will be useful to your agency, taking into account risk priorities you identified in your assessment, what resources (staff and funds) you have, and how much lead time you have before the event.

But whether you use one or more surveillance systems you will need to:

- 1 Define priorities, responsibilities, and roles
- 2 Assign data management, analysis, and interpretation procedures
- 3 Determine reporting procedures and schedules

What to Include

Enhanced surveillance systems should detect the diseases you identified in the risk assessment. The table below outlines the types of diseases you should include in an enhanced surveillance program for a mass gathering.

Type of Health Risk	Examples	Incubation Periods
Highly infectious that have outbreak potential	Measles	7–18 days
	Influenza	1–4 days
	Bacterial meningitis	2–10 days
	Varicella	12–25 days
	Mumps	2–4 weeks
	Pertussis	6–20 days

Type of Health Risk	Examples	Incubation Periods
Short incubation period	Influenza	1–4 days
	Foodborne illness (e.g., E. coli)	Hours–days
	Norovirus	1–2 days
	Shigellosis	1–7 days
Difficult to treat or manage	Tuberculosis	Weeks–years
	Parasitic infections (e.g., lice)	Varies
Likely to be intensified in a mass gathering situation	Foodborne illnesses	Hours–days
	Weather-related illness/injury	Hours
	Drug-related illness and injury	Hours
Causing severe illness and requiring investigation or application of control measures, like quarantine	Viral meningitis	Varies
	Cholera	Hours–5 days
	Diphtheria	2–5 days
Known to be a particular risk for use as bioterrorism agents	Anthrax	1–7 days
	Smallpox	7–19 days
	Viral encephalitis	5–10 days
Not normally seen in the host country (if participants are foreign)	Yellow fever	3–6 days
	Typhoid	3–60 days
	Measles	7–18 days

Keep in mind the duration of the event may influence the types of disease that should receive surveillance priority. For example, if the event is only a few days, then diseases with a longer incubation period may receive a lower priority than those with a short incubation period (such as foodborne illnesses).

Case Study: Music Festival

Based on the previous table, what health risks should you include in an enhanced surveillance system for Masters of Rock? Think back to the risk assessment you completed in the previous section. Of the health risks identified, what should you include in an enhanced surveillance program?

Type of Health Risk	Examples	Incubation Periods	Include for Festival?
Highly infectious that have outbreak potential	Measles	7–18 days	No
	Influenza	1–4 days	Yes
	Bacterial meningitis	2–10 days	No
	Varicella	12–25 days	No
	Mumps	2–4 weeks	No
	Pertussis	6–20 days	No

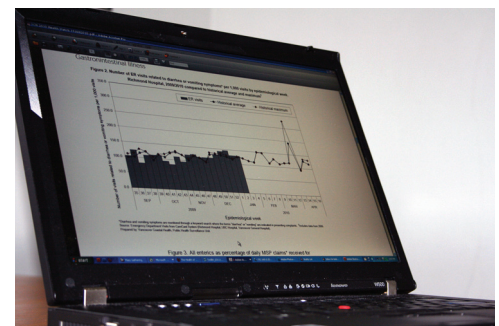
Type of Health Risk	Examples	Incubation Periods	Include for Festival?
Short incubation period	Influenza	1–4 days	Yes
	Foodborne illness (e.g., <i>E. coli</i>)	Hours–days	Yes
	Norovirus	1–2 days	Yes
	Shigellosis	1–7 days	Yes
Difficult to treat or manage	Tuberculosis	Weeks–years	No
	Parasitic infections (e.g., lice)	Varies	No
Likely to be intensified in a mass gathering situation	Foodborne illnesses	Hours–days	Yes
	Weather-related illness/injury	Hours	Yes
	Drug-related illness and injury	Hours	Yes
Causing severe illness and requiring investigation or application of control measures, like quarantine	Viral meningitis	Varies	No
	Cholera	Hours–5 days	No
	Diphtheria	2–5 days	No
Known to be a particular risk for use as bioterrorism agents	Anthrax	1–7 days	No
	Smallpox	7–19 days	No
	Viral encephalitis	5–10 days	No
Not normally seen in the host country (if participants are foreign)	Yellow fever	3–6 days	No
	Typhoid	3–60 days	No
	Measles	7–18 days	No

Surveillance Systems

Now that you know which types of surveillance to use for Masters of Rock and which health risks to include, how long will it take to set up the surveillance system(s)? It depends on what is already in place in your community. It might take minimal effort to setup the surveillance system, or it could take months of planning to implement.

Strengthening existing surveillance systems that your community already uses requires the least amount of effort. It will take much more time and resources if you have to set up new systems.

Whether enhancing an existing system or creating a new one, be sure to partner with health care, law enforcement, and emergency management to establish a comprehensive surveillance and monitoring system.

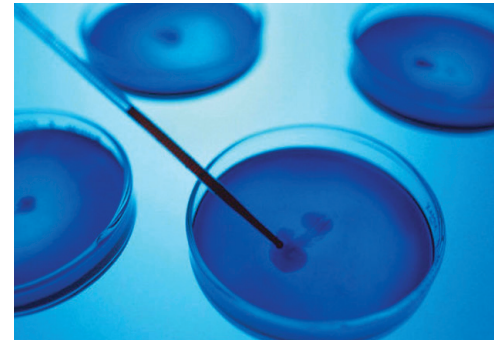


Before the Event

Before Masters of Rock begins, what kinds of health data will you need? By determining baselines of the health conditions or diseases in your community,

you will know if there is a meaningful increase in certain diseases or conditions during the mass gathering.

To establish baseline incidences of specific diseases, new or enhanced surveillance systems need to be in place well ahead of the event. This involves coordinating across multiple jurisdictions and agencies to assure adequate surveillance and response. Moreover, additional testing capability and human resources for outbreak investigation may be needed. Having new or enhanced surveillance systems ready before the event will also give the people involved in managing and using these systems enough time to get trained and become comfortable with them.



During the Event

Masters of Rock is finally here! You have completed a risk assessment, enhanced your surveillance systems, and determined baseline health data in your community. So what do you need to do for surveillance during the actual event?

During the event, you should develop a plan to analyze, interpret, and report the surveillance data. Make sure that:

- Data are received in a timely way
- Daily reports are available and properly shared
- Laboratory tests are completed and reported efficiently
- Communications with surveillance partners and key stakeholders occur as planned (at minimum a daily conference call or email report)

You should also establish the criteria for public health action or additional investigation, who needs to be informed of surveillance findings, and how frequently they need to be informed.

Surveillance needs to happen at the site of the mass gathering as well as at local health care facilities in the surrounding area. Be sure that you are gathering data from more than just the large health care facilities in the area—patients may go to smaller facilities or private practitioners for care.

It is often very helpful to have public health personnel on-site at venues to be the “eyes and ears” in the field. If an incident happens during Masters of Rock, these people will be able to quickly communicate what is happening on-the-ground, freeing up other health care personnel to treat the sick or wounded. On-site public health personnel will also be able to rapidly initiate public health interventions (such as **contact tracing**, vaccination, quarantine) if necessary.



What Would You Do?

You have a 10 day summer youth camp. Because the days can get hot, you are concerned about kids becoming dehydrated. The campers also share water and sanitation facilities, so you are worried about a potential gastro-

Contact tracing: The identification and diagnosis of individuals who may have come into contact with an infected person.

intestinal disease-related outbreak. How should you enhance your surveillance system?

- Establish baseline health by screening all kids when they arrive.
- Set up a system to track reported symptoms of illnesses or injuries.
- Organize an epidemiological investigation team in case an outbreak occurs.

What They Did

In July 2005, public health officials began a daily syndromic sentinel surveillance system to monitor disease and injury among 43,000 people attending a 10-day national youth camping event. When the campers arrived, each kid was screened for the following symptoms: vomiting, diarrhea, rash, fever, pink or red eye, and cough. If any group of campers on a single bus had at least three persons with symptoms commonly associated with communicable disease during the preceding 48 hours, the entire group was referred for in-depth screening.

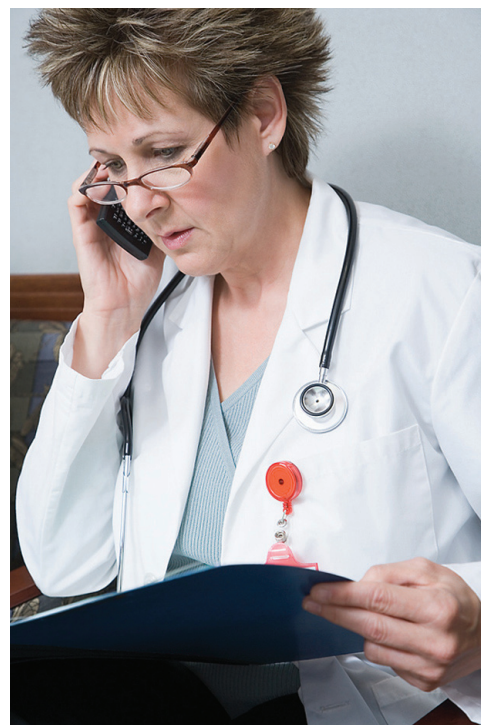
At each clinic, medical staff logged each patient's complaints into specific categories, so that rates for each type of illness or injury could be rapidly calculated. By following up on illness and injury clusters identified daily, the public health team could implement control measures for a GI illness outbreak and recommended measures for preventing heat-related illness.

Timely Reporting

All this work to establish or enhance surveillance is only useful if you can act on the results in a timely manner. For example, if there is an increase in gastrointestinal symptoms from one of the food vendors at Masters of Rock, you need to detect it quickly to contain the spread and minimize the number of people affected.

You can improve timely reporting by:

- Setting up your surveillance system so that clinicians or public health workers can report problems at any time, day or night, weekday or weekend.
- Establishing an alert system so that incidents are communicated to the appropriate people and acted on, if required.
- Integrating data from all surveillance systems to provide comprehensive and consistent results. You may be using more than one surveillance system at your mass gathering. (For example, your clinics and environmental health team use separate systems.) Each system may flag results or thresholds differently. Reconciling these differences will help you determine whether a potentially disastrous situation may be happening.



If more than one surveillance system is in place, ensuring the results are understandable is important, particularly if results or thresholds for action differ by system.

After the Event

The three-day Masters of Rock Festival is now over. Everyone is going home, but you can't pack up just yet! Surveillance is not necessarily finished at the end of a mass gathering. You must also plan for post-event surveillance, if needed.

It is possible that an infectious agent is discovered in the latter part of a mass gathering, and you may need to track it after event participants have returned home. You should make sure your surveillance system is operational for the same amount of time as the disease in your risk assessment with the longest incubation period.



What Would You Do?

At a weekend gaming convention in your city, an outbreak of H1N1 influenza occurs during the convention. What would you do to track attendees back to their communities?

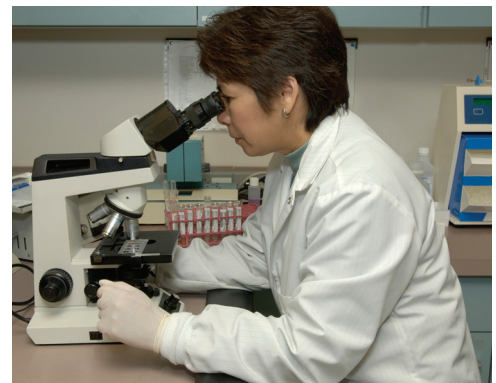
- The convention is over. It's other local health districts' problem now.
- Don't let attendees leave.
- Ask confirmed cases to report their flight information.
- Get a list of people the sick or exposed attendees came into contact with once they got home.

What They Did

In September 2009, an outbreak of H1N1 influenza (nicknamed H1Nerd1) caused nearly 100 confirmed cases at the Penny Arcade Expo in Seattle (PAX). Through the sponsor's Web site and the official twitter feed, organizers asked that PAX attendees with doctor-confirmed cases report their illnesses and their flight information so they could update a growing list of outgoing flights that carried sick travelers.

Summary

For mass gatherings, enhancing public health surveillance will enable you to rapidly and more effectively detect outbreaks and other health-related incidents. Surveillance is needed for a period of time before the event, during the event, and for a period of time after the event. Enhanced surveillance enables public health teams to respond with timely control measures.



Health Response

Now that you have a new and improved surveillance system, are you prepared to quickly implement control measures if an adverse health incident happens during your next mass gathering?

Mass gatherings make responding to illnesses and injuries more difficult. Challenges include greater than usual movement of people, more interaction among large numbers of people in confined areas, greater impact and stress on local infrastructure systems (roads, utilities, and health care) and higher levels of chaos and confusion.

In a mass gathering, you will still use many of the same techniques that you would normally use for emergency response or outbreak investigation. But given the conditions of a mass gathering, you will need to do some extra planning to make sure you are ready to respond effectively to anything that happens during the event. Your plans should include procedures for health care capacity, emergency services, **triage**, infection control, **mass dispensing**, and **intentional acts**.

Planning a Risk Response

Go back to the risk assessment you completed for the Masters of Rock Festival. The risk ratings are like priority codes—they tell you what level of response you will need to reduce the likelihood and harmful consequences of risks to the community and environment.

Level of Risk	Recommended Action
4 = High	Action must be taken to reduce consequences or likelihood
3 = Significant	Some action must be taken
2 = Moderate	Specific monitoring or response procedures required
1 = Low	Managed by routine measures

The specific action you take depends on the risk identified. But with each risk, ask yourself three questions:

1. **What avenues exist to prevent this risk?** For example, to prevent heat-related illnesses associated with Masters of Rock you might ensure that the venue has enough water stands, adequate shade covering, and public health messaging about how to prevent heat-related illness.
2. **What systems are in place to manage the consequences of this risk if/when it arises?** For example, if an infectious biological agent is deliberately released at your event, can participants be isolated or quarantined? Is the health care system prepared for worst-case scenarios? Are antibiotics or vaccines stockpiled and readily accessible for the at-risk population?
3. **Are public health responders trained to deal with this specific risk?** Are enough responders trained? You may want to consider readiness drills and exercises, and tapping into medical reserve corps volunteers, if available.



Triage: A system of assigning priorities of medical treatment based on urgency and chance of survival.

Mass dispensing: Large-scale distribution of medications, vaccines, and other medical supplies.

Intentional acts: The deliberate release of biological, chemical, or radionuclear agents to cause illness or death in people.



What Would You Do?

Fan rivalry at a sporting event quickly ignites rioting and a crowd stampede. Dozens get trampled and need immediate medical attention, including some who are critically injured. What could you have done before the game to minimize the severity of injuries and loss-of-life?

- Train responders in triage and response protocols.
- Make sure ambulances have access to the venue.
- Make sure local hospital ERs can handle a sudden influx of patients.

What They Did

In 2000, a World Cup soccer qualifying match between Zimbabwe and South Africa took place at the National Sports Stadium in Harare. When a plastic bottle was thrown onto the field and hit a player on the head, police responded by using tear gas. A stampede of the 40,000 attendees ensued. Many were injured and 13 people died.

Unfortunately, no arrangements had been made to have ambulance services present at the stadium. Most of the injured were taken to the hospital in private cars, so they did not receive on-site triage. Even with patients carried by ambulance, there was no on-site triage to inform decision-making at the hospital. No command center had been set up, so the hospital first became aware of the event when the injured arrived. This meant off-duty hospital staff were not called. Furthermore, no teams were set up to manage patients in the emergency room, particularly those who were critically injured.

Health Care Capacity

Imagine that the unthinkable happened at Masters of Rock: a terrorist releases a chemical agent at the event, making hundreds ill and killing several people. To effectively treat the ill and prevent even more from dying, you need to know the capacity of the health care system before such a situation ever happens.

Refer to the toolkit for additional resources on health care capacity and laboratory capacity.

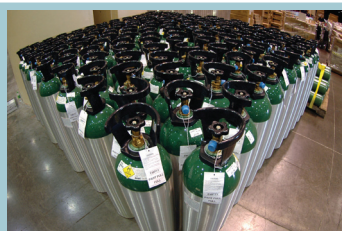
For example, you might want to consider the following:



Are there enough ambulances available to transport all of the sick individuals to hospitals for treatment?



Are enough resources available to responders on scene and at hospitals to decontaminate patients?



Do you need special equipment or medical supplies to treat people affected by the chemical attack, like respirators, oxygen, antibiotics, or other medications?



Is there adequate access to the venue and movement around the site for health and emergency services?



Since you are dealing with **mass casualties**, what is the capacity of local and regional hospitals to handle the patients?



Since you know some participants are from other countries, are you and the community prepared to treat them? For example, their medical records may be difficult to understand or unavailable, and their medications may be dispensed in different dosages.

Mass casualty: A large number of people injured or dead in a relatively short period of time, usually as the result of a single incident that exceeds local logistical support capabilities.

Note that within 90 minutes following an incident, 50% to 80% of most seriously injured people are likely to arrive at the closest health care facilities, and other hospitals outside the area usually receive few or no casualties. People who are less-injured often leave the scene under their own power and go to the nearest hospital. As a result, emergency medical services may not triage them at the scene. You will learn more about triage later in this section.

Carefully assessing available resources and making contingency plans will help the system perform better under the strain of a mass gathering event. Identify alternate sites for medical care in case the capacity of the existing health care system is exceeded.

Emergency Services

When planning for medical services for Masters of Rock or any other mass gathering, you will need to arrange adequate emergency medical services both at the venue and in the community. Providing on-site medical care will significantly reduce the demand on emergency departments and local health care facilities in the area.

Events that are big and last a long time (like the Olympics) usually have more extensive health care capabilities on-site. You should make your decision about the level of on-site care based on duration of the event, crowd size, anticipated health risks, and available financial and human resources. In short, go back to your risk assessment. It may also be helpful to talk to people who have provided medical care at similar events, at similar sites, and under similar weather conditions.

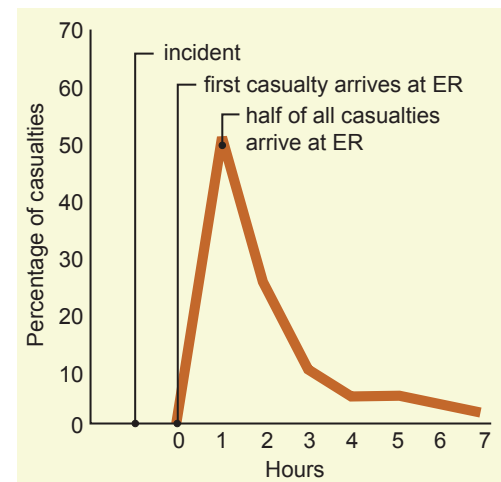
Masters of Rock might have a medium level of on-site services available. This would enable you to treat those who are mildly affected by the chemical attack and triage the rest before sending the most critical to area emergency rooms.

Triage

Imagine that the weather forecasters are predicting a heat wave to roll in on the third day of Masters of Rock. The temperature is expected to peak at 95° F, and there is not much shade available to the approximately 50,000 participants. You know this could cause a large number of heat-related illnesses. Are you prepared to respond to this?

Standardized triage procedures are essential in providing adequate care to large numbers of people. When developing or revising your triage procedures for mass gatherings, make sure to:

- **Prioritize the high risk events.** Develop triage procedures for a wide range of risks based on your risk assessment. You identified heat-related illnesses as a significant risk for Masters of Rock, so this should be one of the priority areas.
- **Include agencies outside public health in the procedures.** Triage procedures are closely connected to emergency medical services, so plans for ambulances need to be closely linked to your triage plans. Also, all first responders (firefighters, police, medical personnel, etc.) will require training in the use of your triage procedures.
- **Involve volunteers.** An effective response may overwhelm existing staffing for any single public health agency. This is an opportunity to plan for the recruitment and training of volunteers, such as Medical Reserve Corps, if available in your community.



Provision of Emergency Medical Care for Crowds describes planning for emergency services at mass gatherings in more detail, including determining the number of health care workers and types of medical supplies needed.

Expected percentages of patients in triage categories

Description	Vital signs	Mental state	Percentage
Critical	Unstable	Abnormal	0.02%
Serious	Potentially unstable	Potentially abnormal	1.1%
Moderate	Usually stable	Normal	12.0%
Minor	Stable	Normal	87.0%

Infection Control

Let’s say instead of a heat wave at Masters of Rock, at the end of the second day your surveillance reports show that several people presented with a high fever, stiff neck, and headache. By morning, the report shows many more people were admitted to the hospital overnight for the same symptoms, accompanied by nausea and vomiting. You determine there is a meningitis outbreak, but how do you prevent ill persons from infecting more people?

If an outbreak like this occurs, you need to be ready to activate infection control procedures. It is a good idea to review and update standard infection control procedures at area hospitals and clinics so they can be quickly implemented if large numbers of people are hospitalized. You should also review and update **isolation** and **quarantine** protocols.

To be able to effectively control an outbreak, you should plan for the following:



Evaluate infection control procedures at area hospitals and other medical facilities. Do they need to be revised to respond to the potential risks that you identified in your risk assessment? Do people have adequate training to implement the infection control procedures? Have you established decontamination procedures, and does the capacity exist to carry them out? Do labs have adequate capacity to characterize the diseases identified in your risk assessment?



Ensure that there are adequate supplies of personal protection equipment. This includes masks, gloves, and hand sanitizer.

Isolation: separating people confirmed to have an illness and restricting their movement to prevent further spread.

Quarantine: separating and restricting movement of people believed to be exposed but are not yet ill.



Designate special facilities for isolation. Is there a specific place where patients in need of isolation can stay? In the case of serious illness, this may need to be at a hospital, but otherwise it could be a local hotel, Armory building, college/university dormitories (when school is not in session), etc. For airborne illnesses, make sure that isolation areas do not exchange air (such as heating/cooling/ventilation) with parts of the building where there are uninfected people.



Conduct training at every level. This includes public health investigators, emergency management technicians, hospital staff, and field medical station staff.

More detailed information about isolation and quarantine and an infection control checklist are included in the toolkit.



What Would You Do?

A large sporting event for university athletes, which will attract participants from across the nation, will be held in your community. Two weeks before the event, your community still hasn't had any cases of H1N1 influenza, although there are cases in other states. You are concerned that with people coming from around the country, an outbreak may occur. Your health director asks you to propose an infection control plan to minimize the spread of the virus. What do you propose?

- Have procedures for triage.
- Identify places where sick people can be isolated.
- Have a plan for cancelling the event in case of an outbreak.
- Order masks and other personal preparedness equipment.

What They Did

In July 2009, Serbia hosted the 25th Universiade, an international sporting event for young university athletes. One month before the event, no cases of H1N1 influenza had been identified in Serbia.

In a prevention effort, organizers urged people to reconsider travel to Serbia if they had any influenza-like symptoms. Criteria for recommending cancellation of Universiade were also set in case of a rapidly evolving situation.

To manage H1N1 cases, individuals with suspected infections were isolated at medical facilities until diagnosed. Confirmed cases were then advised on self-isolation or hospitalized if medical care was needed but not quar-

antined. People with H1N1 received antiviral treatment. Although contact tracing was undertaken where feasible, prophylaxis not given. As standard infection control practices, only health care workers and suspected or confirmed cases wore masks.

Mass Dispensing

Since you determined the outbreak at Masters of Rock is bacterial meningitis, you need to quickly provide medications to those who become ill. Do you have an adequate stockpile of the appropriate medications to treat the at-risk people attending Masters of Rock? Do you have enough trained personnel to distribute and administer the antibiotics? Do you have mass dispensing agreements with community pharmacies?

If an outbreak occurs during your mass gathering, providing rapid, reliable access to medication during the event—both treatment and prophylaxis—is an important aspect of an effective response. Look back at your risk assessment. Determine if medications and, as appropriate, vaccines are available for the health risks rated as a 3 (some action must be taken) or a 4 (action must be taken).

Note that if the Masters of Rock outbreak had been viral meningitis instead of bacterial meningitis, antibiotics don't exist to combat it. Other diseases without curative medicines include many other viral diseases. In these situations, you can only offer supportive care and symptom management.

Intentional Acts

You also need to make plans so that the health care system is ready to handle patients in case of deliberate attacks during mass gatherings—such as biological, chemical, or radionuclear attacks. Patients will be handled differently for different types of exposures, so you should establish procedures that ensure health care workers and facilities are prepared for a wide variety of scenarios.

Identifying biological and chemical compounds may involve sophisticated tests that take several hours or even days to get results. Furthermore, the initial signs and symptoms among victims of bioterrorism may be nonspecific and present as common diseases.

Enhancing your surveillance system will provide timely and accurate information for early warning of potential threats. It will also allow you to screen potentially exposed individuals earlier, thereby allowing you to respond rapidly. Strong cooperation with law enforcement will also minimize loss-of-life and control the spread of disease and chaos. Appointing a liaison will allow public health to focus on managing the health aspects of responding to an intentional act, and law enforcement to deal with security issues.

You can learn more about mass dispensing in *Emergency Distribution of Pharmaceuticals*.



See the toolkit for additional information on handling patients in a deliberate event during a mass gathering.

Summary

Due to the nature of mass gatherings, special planning to provide emergency or ongoing medical care is necessary to effectively respond if an incident does occur. When planning your response, be sure to standardize triage and infection control procedures, and develop procedures for responding to intentional acts. Your risk assessment will help you figure out what medicines you will need to stockpile and what medical services you will need for the event.



Coordination

Mass gatherings often bring together organizations that have never worked together, and some of these groups may not have experience working with public health. As such, it is very important to establish excellent coordination systems, supported with inter-agency agreements, to ensure all organizations involved understand their respective roles and responsibilities. You will also need to establish a command and control function to manage situations as they arise.

Agency Operations Center

Establishing an agency operations center (AOC) for the mass gathering will help ensure proper coordination, control, and distribution of information to the various organizations involved in preparation, monitoring, and response. An AOC coordinates all health-related operations at the mass gathering. The actual center may have a different name, but the concept is the same. Public health AOC activities occur in a larger context of emergency systems and structures. Depending on the organizational structure of your health department, the AOC for your mass gathering may fall under the umbrella of **ESF-8** or **ESF-6**.

During the mass gathering, the AOC may be responsible for:

- **Data management:** Coordinating data collection, monitoring data accuracy, developing reports and charts, and sharing this information with those who need it.
- **Outbreak response:** Coordinating epidemiological investigations, including data collection and analysis. Gathering input from experts about whether isolation or quarantine are needed if an outbreak occurs.
- **Coordination and management of medical resources**
- **Collaboration:** Creating a forum where experts can give advice and provide real-time consultations on precautionary and response measures. Coordinating on-site emergency operations with existing emergency operations in the community.
- **Communication:** Facilitating effective communication between agencies. Quickly transmitting early warning and alert messages so that stakeholders can rapidly make decisions.

Emergency Support

Function (ESF) #8: FEMA provides Federal assistance to supplement State and local resources in response to public health and medical care needs following a major disaster or emergency or during a developing medical situation.

Emergency Support

Function (ESF) #6: FEMA coordinates the delivery of Federal mass care, emergency assistance, housing, and human services when local, tribal, and State response and recovery needs exceed capabilities.

During the meningitis outbreak at Masters of Rock, the AOC would be responsible for verifying the data from the surveillance systems and sharing it with key public health officials. The AOC would coordinate the outbreak investigation and make sure area hospitals and clinics knew about the outbreak. It would also consult with experts about how to isolate the infected people.

The AOC is responsible to the incident command system (ICS), which is responsible for overall event coordination and emergency response. To better facilitate coordination between the two, the AOC should have a dedicated phone line that connects directly to the ICS, as well as a staffed desk at the ICS.

To learn more about ICS for hospitals, National Incident Management System (NIMS), or ESF #8, see the toolkit.

? What Would You Do?

Your state has a law that requires organizers of mass gatherings to give free water to attendees if it is decided the situation calls for it. At the Highland Games, held during the summer, the planners have set up the enhanced surveillance system to track people visiting the first aid tents complaining of fatigue or dehydration. You notice a strong increase in people coming in for these symptoms during the event. Who do you contact to get the go ahead to begin distributing free water?

- The state public health officer.
- The local public health officer.
- ICS.
- AOC.

What They Did

During the 1996 Olympics, people working in first aid tents would report to the AOC how many people complained of fatigue and dehydration. Once a certain threshold was met, the AOC would contact the ICS. ICS would then contact the state public health officer, who would decide whether or not to give people free cups of water.

Developing an AOC

Most AOC functions will probably already be developed in your health department from previous planning processes for public health emergency plans. For mass gathering planning, you will need to access existing plans and ensure the following questions are addressed:

- Who has decision-making authority if an outbreak or other emergency occurs?
- Who makes what decisions?
- Who starts and stops different responses?

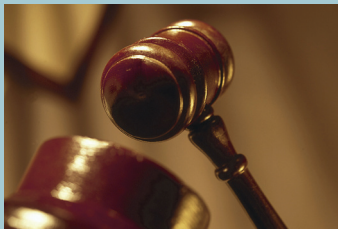


- Who notifies the various stakeholders? A list outlining key stakeholders, including roles and contact information, is helpful.
- How will you communicate with health care providers, the public, and mass media?
- Who orders resources and equipment during an emergency episode?

If a meningitis outbreak occurred at Masters of Rock, you may have to isolate the sick attendees. The decision to isolate people lies with the state health director, a role defined early in the planning process. The state epidemiologist is the person responsible for mobilizing and coordinating state and local labs.

Developing AOC Protocols

These protocols likely exist from previous emergency planning processes within your health department. Make sure the following protocols have been developed and update as necessary for each mass gathering.



Legal powers for quarantine and selecting possible isolation sites and plans for how they will be used



Security procedures in conjunction with local police and other law enforcement agencies



Operational procedures for essential functions, such as maintaining essential systems like water, electricity, and waste disposal



Operational procedures for mobilizing necessary staff, resources, and their availability



Procedures for surveillance and epidemiological investigations, including contact identification and tracing, vaccination of contacts, mobilizing laboratory resources, and alerting and training health care providers about identifying and reporting suspected cases of interest

During the meningitis outbreak Masters of Rock, your quarantine protocols might identify the community college dormitory to house the ill.

Implementing an AOC

Your AOC should be prepared to activate at all times, with AOC participants on-call 24 hours a day for the duration of a mass gathering. Establish security protocols and systems, including ID badges for staff and visitors. Responding and coordinating agencies should know the location and the contact numbers for the AOC.

After your AOC protocols are updated for your mass gathering, it is a good idea to practice before the actual mass gathering event. You may want to host trainings and field exercises to ensure the system operates smoothly during the actual event. Scenarios and table-top exercises are good ways to find out if what you have planned will work in reality. For Masters of Rock, since hot weather was identified as a high risk, you should have practice exercises about how to keep attendees hydrated (providing water and communicating prevention measures) and test how well your triage procedures work.



See the toolkit for additional information on training and exercises.

Logistics

Logistics are a crucial aspect of any mass gathering planning, and should not be overlooked.

Logistics: the identification, acquisition, transport, storage, and provision of materials, resources, and supplies

See the toolkit for additional resources on addressing the logistical needs of mass gatherings.

For example, at the Masters of Rock Festival logistics could include providing



Adequate fuel for emergency vehicles



Emergency vehicles when needed



Sufficient computers and cell phones



Internet connections and phone accounts



Meals and sleeping accommodations for responders



Medical plan for protecting the responders



Identification, acquisition, and training of additional staff and volunteers

Mass gatherings make logistics even more demanding since the infrastructure is strained and because they require a great diversity of supplies. If a crisis does occur, suddenly everyone will need support, and all their needs will be high priority. Additionally, medical supplies, like pharmaceuticals, may require special storage, transportation, and monitoring. Local jurisdictions should consider

establishing local stockpiles or pre-deploying essential medical supplies to reduce the time involved in moving supplies to more remote locations.

Summary

It is extremely important to establish excellent coordination systems both within and outside public health so you can have rapid and coordinated response to any public health incidents during a mass gathering. An AOC or incident command system is the central coordinating hub for public health during the mass gathering.



Communication

Facilitating communication is essential to successfully managing the public health aspects of mass gatherings. Communication needs to happen:



Internally, that is, within the health sector and among the different agencies with whom you are coordinating.



Externally, that is, to the public in case of a large-scale outbreak, terrorism attack, or other public health emergency.



What Would You Do?

Your community is hosting a Labor Day Parade. You find out one of the horses marching in the parade has rabies. Horses are capable of transmitting the rabies virus to people. How do you quickly notify the 2,000 people attending the event of the risks and precautions?

- Quickly print fliers and pass them out to attendees.
- Alert the Department of Health and CDC.
- Contact local news media outlets.

What They Did

The world famous Walking Horse National Celebration attracts over 150,000 people to Shelbyville, Tennessee each year. In 2006, a horse stabled on the grounds was confirmed to have rabies. The Tennessee Department of Health (TDH) used the Tennessee Health Alert Network,

CDC Health Alert Network, and Epi-X to quickly correspond with regional and local public health departments, emergency departments, and CDC about assessment and treatment for people exposed to the rabid horse. (Internal communications)

TDH also immediately initiated an extensive public messaging campaign via print and television to communicate the risks associated with attending the event and contact with the rabid horse. In addition to media communications, TDH sent 4,200 attendees letters, and consulted with the 53 people who were exposed, recommending boosters or post-exposure treatment as appropriate. (External communications)

Internal Communications

All the agencies involved in planning and coordinating the mass gathering need to be able to communicate with each other during the event. This includes within the health sector, with outside agencies, as well as between staff and volunteers inside and outside the venue.

For example, during the meningitis outbreak at Masters of Rock, you should be able to:

- Promptly report numbers of diagnosed and suspected cases and any related patient information to the designated public health authorities.
- Facilitate information sharing between workers, suppliers, vendors, etc.

At the planning committee meetings prior to the mass gathering, you should establish what kinds of regular communications the team will have during the event. You will also want to decide who needs what types of information.

Regular communications include:

Daily teleconferences and activity reports among relevant stakeholders

Daily surveillance reports for public health authorities

Face-to-face meetings and conference calls at prescheduled intervals and as needed

Regular Communications

In most cases, the public health communications will be managed within the context of a larger structure—often a Joint Information Center run by the overall incident command center for the mass gathering.

Infrastructure

One of the most important functions of a communication system during a mass gathering is to provide prompt, reliable communication channels to and from public health authorities, health care facilities, and other relevant agencies. To

do this, you need to provide reliable hardware and network systems. The most important considerations in planning communications systems are ensuring interoperability and redundancy.

Interoperability: The ability for all different devices (cell phones, two-way radios, etc.) and systems (network carriers, radio frequency bands) to function together.

Just like one cell phone on one network can call and speak with a telephone made by a completely different manufacturer and hosted on a different network on the other side of the world, so must one type of radio be able to interact with another. This task becomes more important—and more complex—when working with different organizations using different communication hardware during a mass gathering.

Redundancy: Having duplicate systems using simple technology, in case one breaks down. Also sometimes called “multimodal communications.” This means you should not rely on one single system, and you should also have your own back-up power supply.

Additional information on setting up a communications system for mass gatherings can be found in the toolkit.

External Communications

If something like the meningitis outbreak happens during Masters of Rock, you will need to provide timely information to the general public as part of managing the crisis. Emergency risk communication explains to the public the nature of the crisis, what is being done, potential risks to their health, and what they can do to protect themselves.

For more in-depth information in developing an external communications plan, please refer to the *Emergency Risk Communication for Public Health Professionals* module.



You need to be able to communicate with participants at the event, as well as the larger community. A key to external communications is developing an understanding among response agencies as to who will be in charge of what message. Establishing credible spokespersons in advance is important.

Consider language and culture in these plans. For example, at Masters of Rock you anticipated a large number of Latino participants, so you will need to communicate information in both English and Spanish.

Mass Media

Working proactively with the media is an important way to minimize casualties, chaos, and panic in the event of a major health incident during a mass gathering.

There are four key steps in preparing a media communications strategy:

1. **Develop a media communications plan.** Assign roles and responsibilities about who prepares the messages, who authorizes the messages, and who contacts the media.
2. **Train communicators.** Designate a public information officer and a lead spokesperson.
3. **Prepare messages.** Look back at your risk assessment and determine which health risks may need public communications if they occur. Prepare clear, concise messages ahead of time, and develop responses to anticipated questions and concerns.
4. **Identify media outlets.** Identify and establish a relationship with key contacts at television, print, and radio outlets before the event.

Remember that when you deliver messages via the media, transparency should be your primary goal. Messages should be easily understood, complete, free from distortion, and explain any reasons for withholding information.



Effective Media Communication During Public Health Emergencies: A WHO Field Guide is a useful tool for more in-depth information in working with the media.



What Would You Do?

The annual high school basketball tournament will be taking place tomorrow in your town. Multiple teams compete in the tournament, which is always well attended by people from surrounding towns. Unfortunately, this year there is an unusually large respiratory syncytial virus (RSV) outbreak. RSV is serious in young children, but not for healthy older children and adults. You decide not to cancel the tournament, but want to alert people about the outbreak. What should your communication strategy include?

- Designate a lead spokesperson.
- Create brochures.
- Identify media outlets.

What They Did

In 2007 Barrow, Alaska, had a large RSV outbreak and had to transfer many of their patients to Anchorage because their local hospital was overwhelmed. Barrow was also hosting the annual high school basketball tournament. The state public health department conducted a big media blitz to educate the community about the risks of RSV, targeting parents of young children and encouraging them not to attend the tournament. The public

information officer worked with newspapers and radio stations. In addition to traditional news outlets, public health also contacted native corporations, which have clout and can spread the word quickly. The epidemiology section in the department of public health also drafted and distributed pamphlets about RSV.

Summary

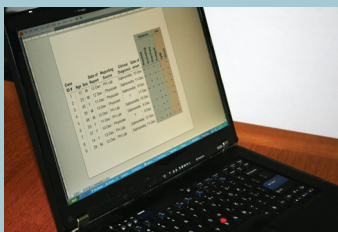
The backbone of any response plan is the ability to communicate. For mass gatherings, you need to establish a reliable internal communications system that is both **interoperable** and **redundant**. You also need to develop a plan for communicating with the public in the event of a health crisis.

Module Summary

Mass gatherings are preplanned public events held at a specific location for a defined period of time that strains planning and response resources. The goal for public health at mass gatherings is to prevent or minimize the risk of injury or ill health and maximize safety for participants, spectators, event staff, and residents. You can achieve this through careful advance planning, including:



Risk assessment: identifies potential public health risks and guides further planning efforts



Surveillance: detects public health incidents quickly



Response: implements control measures if an adverse health incident happens to minimize its effects

Coordination and communication are cross-cutting issues that also require advance planning. They enable you to have a rapid and coordinated response to any public health incidents that arise during a mass gathering.

Interoperability: The ability for all different devices (cell phones, two-way radios, etc.) and systems (network carriers, radio frequency bands) to function together.

Redundancy: Having duplicate systems using simple technology, in case one breaks down.