

Infectious Disease Outbreaks, Epidemics, and Bioterrorism/ Environmental Health Emergencies

Why Children Are Especially Vulnerable

Children are particularly vulnerable to rapid spread of infectious diseases and exposure to toxic substances for several reasons. Young children, especially infants and toddlers, have a natural curiosity that leads to frequent and wide-ranging handling of objects and surfaces. Also, they have a tendency to put their hands and objects in their mouths. Because their immune systems are still developing and the same dose is proportionally larger for children because they are smaller than adults, they often have a more pronounced reaction to infections and other substances. Young children are also in the process of completing their immunization series for many vaccine-preventable diseases and may be vulnerable to some of these infections.

Children are highly susceptible to aerosolized biological or chemical agents because they normally breathe more times per minute than adults. As a result, they receive larger doses than adults in the same period of time. Also, because such agents are heavier than air, the agents accumulate in the breathing zone of children. Children are more vulnerable to agents that act on or through the skin because they have a larger skin surface-to-body mass ratio than adults. Children are more vulnerable to the effects of biological and chemical agents that produce vomiting or diarrhea because they have smaller body fluid reserves than adults, increasing the risk of rapid progression to dehydration or shock. Most importantly, children are dependent on others for their care. For example, they would not be especially good about rehydrating themselves without guidance. For these and other reasons, children need vigilant direct supervision (by sight and sound) especially during and after an outbreak and in emergency situations.

In addition, children with special health care needs require specialized planning and extra consideration in every situation. By carefully considering which groups of children may be at increased or even highest risk in a specific disaster or emergency, planning will allow rational setting of priorities if such an event occurs.

Planning

Before an infectious disease or other type of emergency occurs, programs should prepare a written disaster/emergency plan that addresses all relevant risks: infectious disease, bioterrorism, and environmental health emergencies as well as other types of emergencies such as natural disasters, facility damage/fire, presence of threatening

individuals, and acts of violence. This plan should specify procedures for conducting regular drills, mechanisms for communicating with parents and public officials in the event of an emergency, evacuation and safe transport procedures, primary and secondary meeting places for reunification of parents with their children, mechanisms for tracking and caring for children until parents can accept responsibility for their care, shelter in place, and health as other types of record recovery/preservation. Staff members should know and parents should be informed about these emergency procedures. More information is available in *Caring for Our Children*, 3rd Edition, Section 9.2.4.

Types of Infectious Disease Emergencies

When a strange type of illness occurs or an unusual number of individuals develop an illness or symptom, the situation may be an outbreak, epidemic, environmental issue, or incident of bioterrorism. Temporary closure of children's facilities and suspension of activities may be necessary. During an infectious disease emergency such as a large community-wide severe pandemic influenza outbreak, the decision to close should be based on recommendations from national, state, or local public health officials. However, public health officials rarely recommend that child care and schools close because these programs can serve as an important communication link between public health and involved families. Also, when a closure occurs, some parents might put their children in other programs in the area and thus contribute to the spread of the problem to multiple facilities. Administrators of single facilities may elect to suspend operations voluntarily when illness among staff and students reaches levels that jeopardize their ability to conduct operations safely or efficiently. The facility disaster plan should specify procedures for possible program closure. Staff members, parents/legal guardians, health consultants, and public health officials should be involved in this planning. At enrollment and periodically thereafter, families need to be reminded to have an arrangement where they would place their child for care in the event of emergency closure.

An *outbreak* is a sudden rise in the number of cases of a disease. Outbreaks of influenza, hand-foot-and-mouth disease, and bronchiolitis occur seasonally each year. A designated staff member (eg, the health advocate/director/principal) should report outbreaks or unusual symptoms of illness among staff members or children to public health

authorities. This allows public health officials to advise about control measures and help ensure accurate communication among health professionals, child care personnel, and families. The term *outbreak* might be used when a single case of an unusual disease occurs, or when more than one case of a severe illness occurs. An outbreak of an unusual or severe illness must be reported to public health authorities immediately. For example, a report should be made if, on the same day, 2 people (adults, children, or both) in the same group were ill with an unusual rash and fever. Infectious diseases are not the only causes of illness. Environmental problems can make people ill also. Public health authorities should be contacted as soon as a concern arises so they can determine what action is needed to identify the cause and what should be done. Check specific Quick Reference Sheets in this book to see when an outbreak of an infectious disease should be reported.

The ill person's health care professional should be involved in identification and diagnosis of reportable illnesses and in the reporting to public health authorities. However, the designated staff person (health advocate) should contact the health department about any unusual situation even if information is not available in a timely fashion from the health professional. The health advocate should obtain information from the local health department about requirements for reporting of illness among children or staff members. These may vary by state. If a designated staff person quickly realizes that an outbreak of an illness or symptom is occurring, prompt action may reduce the number of people who become ill. A good immediate response is to pay special attention to good hygiene and sanitation practices.

An *epidemic* is the occurrence of more cases of disease than would be expected in a community or region during a given period. The term is similar to outbreak but is commonly used to describe an unusual frequency of illness in a group of people that is not explained by expected seasonal increases. A *pandemic* is an epidemic that spreads through human populations worldwide. Influenza is an example of such a pandemic. Public health officials are engaged in ongoing efforts to prepare for this type of a situation.

The term *bioterrorism* describes a situation in which a biological agent is intentionally released to cause illness. The biological agent involved in bioterrorism may be a living germ or a poison, such as anthrax, ricin, or botulism toxin. If a group of children and adults become ill with similar symptoms at the same time, public health authorities should be notified. They will consider bioterrorism as one of the possibilities as well as the more likely event of an outbreak of common infectious disease. Public health offi-

cial are likely to be more sensitive to such reports if there are signs of certain rare infections (like anthrax or smallpox) that are unusual as "natural" occurrences.

Symptom Records

Conducting daily health checks and keeping symptom records on a regular basis is a good way for caregivers/teachers to identify the potential for an infectious disease emergency or outbreak. Child care facilities and schools typically document enrollment and attendance, yet not all perform regular health checks and track the symptoms of the children in their care. Some programs use a sign-in sheet, which parents complete, at the entrance to the facility; others have a classroom log. A good tool for tracking illness is in Chapter 11, page 221, "Enrollment/Attendance/Symptom Record."

When an outbreak is suspected, the first thing to do is to have a health professional provide expert advice about what is happening. This can begin by contacting the health professional who usually cares for the child who is ill. The director should seek advice from local public health authorities also. This is a good time to have and use an ongoing relationship with a health professional who serves as the program's health consultant—a CCHC, school nurse, or school physician. The health consultant can facilitate communication with community health professionals and help the program implement preventive strategies. Sometimes, the first ideas about the diagnosis change as health professionals receive the results of laboratory tests and are informed by further symptoms of the illness. Once the diagnosis is clear, child care or school personnel should be sure that the ill person's health professionals are aware that the person participates or works in a group care setting and consider what that means for exposure of others. These health professionals may be able to offer some advice to program staff members about what to do. In cases in which public health notification is required, the program director or designee must find a public health professional who will take responsibility for managing the situation.

Parent Notification

Providing clear, accurate, and helpful information to families as soon as possible is crucial. They will know what to expect if they receive and someone reviews with them written policies when they enroll their child. The review should inform them about routines practices (eg, hand hygiene, sanitation, symptom monitoring) and let them know how they will receive information about illness or infections. It is challenging to notify parents/legal guardians about their child's exposure to a potential infection, outbreak, or epi-

demic without causing alarm or prompting inappropriate action. The content of such communications will depend on the situation. Sometimes, it will be necessary to provide information to parents/legal guardians before the cause of certain symptoms is known or a diagnosis has been made. Parents/legal guardians need clear and accurate information about what to do for their own child as well as what actions are unnecessary. The Quick Reference Sheets in Chapter 7 and sample forms in Chapter 11 of this book can help staff members provide needed information once the cause of the outbreak is known. Depending on the scope of the outbreak, notification may need to be conducted by center, school, or district administrators with assistance from local and state public health officials.

Tracking Procedure

Every day, someone should look at the records of symptoms to detect patterns of illness promptly—in each group of children and in the facility overall. If the records suggest an emerging pattern of illness, fewer people may become ill if staff members become more vigilant about performing sanitation and hygiene routines. In addition, someone on the staff should review the daily illness/symptom records about once a month, noting differences in patterns within and among groups of children in the facility. Such differences might indicate that a particular group needs to pay more attention to sanitation and hygiene measures to prevent disease. Quick and appropriate response to unusual circumstances is critical.

Corrective Action

When children in a group seem to have similar symptoms that suggest a contagious disease is spreading, the program should consult with the CCHC, medical advisor, school nurse, or public health professional to develop a plan of action. The plan of action might include the following:

- Immediate education of teachers/caregivers
- Enhancement of routine hygiene and sanitation practices
- Implementation of symptom/screening guidelines
- Modified exclusion and isolation guidelines, especially when children or adults become ill while in the group setting
- Use of prophylactic medicines and other preventive measures
- Onsite immunization clinics (and checking or verifying immunization records/status)
- Recommendations for the use of gloves or masks
- Communication to families about risks, what to watch for, and what to do if symptoms occur

In a serious situation, such as a pandemic, the federal government, governor, or state health director may declare a state of emergency. For additional information about pandemic influenza and a child care/preschool checklist, visit www.flu.gov/planning-preparedness/community/child_care.pdf. For schools, go to www.flu.gov/planning-preparedness/school/index.html. The first point of contact in any pandemic situation should be the local health department. The local health department should know how to engage the appropriate public health professionals for the situation. For information about how to prepare and respond to other emergencies or disasters, consult www.aap.org/disasters.