

Infection Prevention for Ambulatory Care Centers During Disasters



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Introduction

For the purpose of this document, ambulatory care center (ACC) means any freestanding healthcare facility staffed by one or more healthcare professionals that provides services on an outpatient basis and does not include an overnight stay. Examples of ACCs include, but are not limited to, community-based primary care centers, urgent care centers, dialysis centers, diagnostic centers (facilities that offer routine diagnostic outpatient testing, such as laboratory, radiology, ultrasound, testing for general physical exams, etc.), and ambulatory surgery centers. ACCs may or may not have a direct hospital affiliation.

The level and scope of medical service delivery within an ACC may be altered during a disaster from what is routinely provided. For instance, a primary care clinic may need to be expanded to provide outpatient surgical services during a disaster based on the needs of the community. Individuals whose medical needs exceed that which can be provided at the ACC, those that require an overnight stay, or those requiring specialty care should be transferred to a hospital, alternate care site, or other appropriate medical facility as soon as feasible.

ACCs fill a necessary role in the provision of community medical care. During a disaster, increased numbers of individuals may require medical care in a community. Many hospitals and healthcare agencies are currently operating at or near capacity for routine provision of care and lack the resources necessary to accommodate patient surge generated by a disaster. When hospitals cannot absorb patient influx during a disaster, ACCs may need to expand their operations to help address patient surge in the community.

It is important for ACCs to prepare in advance so that the facility is ready to respond should a disaster occur. The complexity of healthcare across the continuum demands thorough emergency management planning.

Disease transmission is possible in ACCs during routine care as it is in any setting where medical care is provided. During disasters, there is increased risk for infection transmission in ACCs, especially if the ACC expands their scope of practice or uses physical space that was not originally intended for the provision of medical care (that is, outside the controlled environment of an existing healthcare facility or in suboptimal environments). An example may include a medical clinic that uses administrative space to accommodate patient surge.

To reduce the risk of healthcare-associated infection (HAI) and secondary disease transmission, ACC staff must implement appropriate infection prevention measures during routine activities, as well as during disasters. An HAI is defined as any infection that results from or is associated with obtaining healthcare. This includes the traditional use of the term HAI, which consists of device- or procedure-related infections (such as catheter-related urinary tract infections, catheter-related blood stream infections, surgical site infections, and ventilator associated pneumonias), as well as the transmission of communicable diseases in healthcare environments, such as the spread of hepatitis A within the ACC after a disaster.

Infection prevention must become part of daily practice, as well as a component of the emergency management planning and training scenarios for

ACCs. Whenever possible, standard infection prevention practices should be employed at all types of ACCs during disasters. During mass casualty events, ACCs must strive to decrease the risk of disease spread. When ideal conditions cannot be met, altered infection prevention standards of care must be implemented to protect ACC patients, staff, and visitors.

This document consists of infection prevention recommendations/guidance that can be used for the development of the ACC emergency management plan. It is designed to be used as a planning and reference document for ACC emergency management planners. It is hoped that infection prevention professionals will be involved in ACCs, but facility resources may not allow this. This document was written with the assumption that an individual without specific infection prevention expertise would be implementing the recommendations, which are divided into sections based on components of an infection prevention program. Emergency management planners may read through the entire document when planning an ACC or use the Table of Contents to identify a specific section to use as a reference guide during a disaster.

Development and implementation of an ACC emergency management plan involves many disciplines, of which infection prevention is only one. As part of the planning process, ACC emergency management planners should coordinate with local, state, and federal planning agencies, including, but not limited to other local healthcare institutions such as emergency management, public health and the American Red

Cross. These recommendations address the unique infection prevention needs of ACCs and should be used in conjunction with existing guidelines related to ACC management.^{1,2}

This document does not replace nor should it be used as a substitute for daily infection prevention protocols for ACCs. The document should be incorporated into the ACC emergency management plan. The ACC's emergency management plan must be coordinated with local, regional, and state plans. A multidisciplinary approach—including infection prevention professionals, healthcare epidemiologists, public health professionals, facility engineering professionals, and others—should be used to apply these recommendations to the response plans. As with all emergency management initiatives, these infection prevention interventions should be tested during routine emergency management exercises and drills. Exercising includes developing an after-action report that includes strategies to fix gaps identified and timely retesting of areas of concern.

The recommendations in this document are based on published guidelines from mostly U.S. organizations and agencies, although guidelines from a few international agencies, such as the World Health Organization, were also used. This document is primarily aimed at ambulatory care centers in the United States; however, international organizations and agencies may find this document useful as a beginning framework for developing an infection prevention program for their non-acute care facilities during disasters.

Overview

The remainder of this document consists of recommendations designed to reduce the risk of developing HAIs or transmitting communicable diseases in ACCs during disasters. This document is intended for existing ACCs. New facilities that will be put in place during a disaster to accommodate patient surge are considered alternate care sites and are addressed in other documents.³ Recommendations in this document should only be used for declared disaster situations. If the ACC will be converted to an alternate care site to accommodate patient surge during a disaster and the facility will provide overnight/extended care, the Association for Professionals in Infection Control and Epidemiology (APIC) Infection Prevention for Alternate Care Sites guidelines³ should be followed instead of the recommendations in this document.

This document serves as the basis for setting up an infection prevention program for emergency management plans in ACCs to prevent the transmission of HAIs and communicable

diseases. Some diseases or conditions, such as smallpox or viral hemorrhagic fever, require more intensive interventions than the standard procedures described in this document. Whenever possible, ACCs should implement routine/standard infection prevention strategies used in healthcare settings during non-disaster times to control disease spread. However, during disasters, resources may be limited and normal standards of care may need to be altered. In those situations, crisis standards of care can be implemented, but should only be used when standard practices cannot be achieved. This document outlines both standard practices and crisis standards of care.

It is important to note that infection prevention recommendations can change during a disaster as more is known about the causative agent and/or situation. ACC managers should partner with their affiliated hospital (if applicable), local hospitals, and public health agencies before and during a disaster, and follow recommendations from these agencies that are specific to the event.

Infection Prevention Program and Plan

ACCs need to have an infection prevention program to monitor for HAIs and prevent the spread of diseases/infection within the facility. The ACC infection prevention program should cover both day-to-day operations as well as an emergency management plan. This document only covers the infection prevention program and plan related to disasters. APIC and other organizations should be consulted when developing an infection prevention program for routine activities at the ACC.

The ACC emergency management plan needs to include a written infection prevention plan that outlines the scope of authority (see Appendix A), infection prevention coverage for the facility during a disaster, and infection prevention policies

and procedures that are specific to mass casualty events. The infection prevention plan should be based on an exposure risk assessment and take into account the capabilities and scope of practice for the ACC. Emergency management infection prevention strategies should be included in ACC planning documents and incorporated into pre-event and/or just-in-time training opportunities for ACC staff (see the Infection Prevention Education section). Many types of resources are needed to run an ACC during routine activities and disasters. Appendix B outlines a list of resources/supplies needed to administer an infection prevention program in ACCs during disasters. Other existing documents should be referenced for more general recommendations regarding resources needed to run an ACC.^{1,2}

Infection Prevention Coverage/Oversight

ACCs should have infection prevention coverage/oversight by a trained individual(s) for day-to-day activities as well as during disasters. If infection prevention oversight is not provided by a trained infection preventionist (IP), an IP designee should be identified by each ACC. If an IP designee is to be used at an ACC, the facility should consider contracting with a trained, experienced IP to help develop the skills and knowledge base of the IP designee as well as to provide expert counsel in developing the ACC's infection prevention plan. The IP designee should have a defined role and responsibilities related to infection prevention.

The IP/IP designee should be included in the incident command staff of the site as a medical/technical specialist. This should be performed in coordination with local public health communicable disease officials who may be aware of additional local/regional resources to assist. It is critical for the IP/IP designee to assist with the

emergency management planning process due to the potential for infection transmission in the ACC. An IP/IP designee will be an important component of this clinical team and can assist in developing a surveillance plan, performing surveillance, monitoring infection prevention practices, and intervening during potential infectious disease outbreaks.

The IP/IP designee shall oversee the entire infection prevention program for the ACC including development of the infection prevention plan and implementation of interventions such as environmental cleaning, isolation, personal protective equipment (PPE) use, surveillance, and hand hygiene. This should be stated in a formal Infection Prevention Authority Statement (see Appendix A) and signed by the chair/leader of the ACC governing body or the governing body's delegate and the IP/IP designee at the site.

Patient Scheduling

ACCs need to segregate potentially contagious from noncontagious individuals as much as possible within the facility. This will be most important during an infectious disease disaster (such as during bioterrorism, an outbreak of an emerging infectious disease, or a pandemic), but will still be necessary during noninfectious disease disasters (for example, natural disasters or terrorist

events that do not involve a biological agent). One method of patient segregation sometimes employed is to schedule contagious or potentially contagious patients for the end of the day. It should be noted that this may not be feasible during infectious disease disasters when a large portion of patients may be contagious.

Triage and Surveillance

ACCs should have infection prevention protocols for identifying all infections, including HAIs and potentially contagious patients, visitors, and staff during disasters. These procedures need to be separate from, and in addition to, the day-to-day infection prevention surveillance conducted at the ACC, although the two should complement each other. This document only covers surveillance issues related to disasters. Triage and screening need to be much more involved for an infectious disease disaster (for example, bioterrorism, outbreak of an emerging infectious disease, or pandemic). Natural disasters and terrorist events that do not involve a biological agent may require very little screening for infectious diseases; however, ACCs should have a program for HAI surveillance for all types of disasters.

Syndromic Surveillance

ACCs should consider participating in a communitywide syndromic surveillance program to identify an outbreak of an emerging infectious disease or bioterrorism attack.⁴ Syndromic surveillance consists of collecting and analyzing nontraditional data or indicators for early detection of an infectious disease disaster. Some examples of ACC data that could be collected and analyzed as part of a syndromic surveillance program include the following: a) number of patients seen in the ambulatory care center, b) number of patients presenting to the ACC with flulike illness or other potentially infectious symptoms, c) number of patients requiring immediate evaluation or transfer to a hospital, d) cancellation of procedures due to illness, e) healthcare staff absenteeism rates, or f) other data available from the ACC that may indicate a change or trend in the community.⁴ If the ACC chooses to participate in a syndromic surveillance program, it must be coordinated with local public

health agencies to provide consistency in data collection and ensure adequate coverage across regions. Syndromic surveillance needs to be a multiagency endeavor, including coordination and communication between the ACC, local healthcare agencies (hospitals, long-term care, home health, etc.), and public health.

Screening/Identifying Potentially Contagious Individuals

ACCs should develop a formal assessment/screening plan. Screening should be conducted on patients, visitors, and ACC staff to identify any potential infectious diseases or conditions before the person enters the general registration/waiting area whenever feasible. An example of a basic assessment/screening form to identify potentially contagious individuals is available in Appendix C. In addition, event-specific screening tools should be developed to help identify potentially contagious individuals who require isolation, such as a screening tool for identifying contagious individuals during an influenza pandemic. Event-specific screening tools, based on the case definition for the disease/condition involved in the incident, may be developed by public health authorities and should be used in the ACC or incorporated into existing screening tools.

Formal screening/assessments (see Appendix C) should be conducted by the following individual(s) in descending order by preference:

- Healthcare provider/professional on-site
- Designated, trained ACC worker or volunteer

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Informal/unwritten assessments (i.e., passive surveillance) can be used in lieu of formal written assessments (such as using Appendix C or another such reporting tool) during disasters that involve extremely limited resources or during disasters that do not involve a biological agent (for example, natural disasters, radiological terrorism, etc.). Informal screening/assessments are not recommended as a substitute for formal assessments during infectious disease disasters (such as bioterrorism, an epidemic, or a pandemic).

Patients, visitors, and ACC staff should be encouraged to report symptoms of infectious diseases whenever they occur, even if they develop

after a formal assessment. Posters of reportable signs and symptoms/syndromes of potentially infectious diseases should be strategically located around the ACC, including all points of entry. A poster example is provided in Appendix D. In addition, ACC emergency management planners/managers should develop posters or signage that is language and reading-level appropriate as part of their preparedness efforts using syndromic surveillance recommendations specific to the disaster. Materials provided by local health departments and Centers for Disease Control and Prevention (CDC) may be valuable in the development of informational items.

Frequency of Screening

Patient and Visitor Screening

More frequent and extensive screening for contagious diseases/conditions will be needed during an infectious disease disaster (for example, bioterrorism, outbreak of an emerging infectious disease, or pandemic) compared to during a natural disaster or terrorist event that does not involve a biological agent. The ACC screening protocol should be flexible and scalable to accommodate the event.

Patient and visitor screening/assessment during infectious disease disasters should occur at the following times:

- Upon arrival/admission to the ACC
- Additional periodic screening should be considered when resources allow; screening/assessment intervals should be determined by the IP/IP designee or infection prevention team and will depend on the risk assessment and the agent/disease involved in the event
- When transferring individuals to another healthcare facility

During noninfectious disease disasters, patient and visitor screening frequency will depend on

the event. Very little screening may be required during a natural disaster unless an outbreak is identified. When an outbreak occurs during any type of disaster, patient and visitor screening should be increased to identify potentially contagious individuals rapidly and implement appropriate control measures. During outbreaks, the frequency of screening protocols outlined above for infectious disease disasters should be followed.

Ambulatory Care Center Staff Screening

ACC staff should be assessed before every shift. In addition, staff should be encouraged to self-report symptoms between assessments. Symptomatic staff should be sent for a formal medical evaluation in the employee/occupational health department or at the designated area within the ACC and/or sent home. The ACC worker should cease patient care activities until they have been medically cleared to work. During noninfectious disease disasters, ACC staff screening frequency will depend on the event (see the Patient and Visitor Screening for Infectious/Communicable Diseases/Conditions section, p. 17).

Infection Prevention Triage

Using data from the syndromic surveillance program, screening process, patient history, and physical exam, individuals should be triaged based on their risk of being contagious. Certain symptoms/syndromes may indicate that an individual has a communicable disease/condition. These syndromes and corresponding appropriate infection prevention interventions

for these syndromes are outlined in Appendix E. Successfully applying infectious disease triage criteria requires training and practice. ACC staff should be trained on these procedures and infectious disease scenarios should be incorporated into facility disaster drills so that personnel can practice these skills.

Triage Area

A triage area with a screener (i.e., individual performing triage/assessment of incoming patients and visitors) should be set up outside the facility or very near the entrance to the ACC. This is necessary to identify potentially contagious individuals before or as quickly as possible after they enter the actual facility. The best location for the triage area (i.e., outside the facility or just inside the entrance) will depend on the physical layout of the ACC; this determination should be part of the ACC's emergency management planning process.

Infection prevention interventions for the triage area consist of the following:

- The screener should wear appropriate PPE; PPE should be chosen based on the disease/event.^{4,5}
- PPE should be available in the triage area for the screener to distribute to patients and visitors as they enter the ACC as dictated by the infection prevention triage (see Appendices C and E).
 - PPE distributed to patients and visitors should be chosen based on the disease/event.^{4,5}
 - Infectious disease disasters will likely require the use of more PPE than a natural disaster.
- In addition to PPE, other respiratory hygiene supplies (such as facial tissues, trash cans, and hand hygiene supplies) should be located within the triage area.
- At least 3 to 6 feet should be placed between chairs in the waiting room/triage area whenever possible.
- Every attempt should be made to have two separate areas for patients/visitors

to keep noninfected/asymptomatic individuals apart from infected/symptomatic individuals.

- It would be best if each area had its own doorway/entrance to the ACC treatment area, but this may not be feasible in all facilities. An example might include the “well” and “sick” entrances common in pediatric medical clinics.
- If the ACC building/structure does not have two separate rooms for this, an open area/space can be physically divided into separate areas with curtains, screens, or other barriers; these types of engineering controls have been identified by the CDC as being a critical component of infection prevention.
- If no physical barrier is available, signs can be used to identify which area/space is for noninfected/asymptomatic individuals versus infected/symptomatic individuals.
- The “well” and “sick” areas should be separated by at least 6 feet whenever possible.
- ACCs with a single doorway/entrance to the ACC treatment area should locate the “well” side of the triage/waiting room on the side with the treatment area doorway/entrance.

See Appendix F for an illustrative example of how to set up a triage area in a space that does not consist of two separate rooms for “well” versus “sick” individuals.

Post Discharge Surveillance

Depending on the scope of care provided at an ACC, post discharge surveillance may be conducted as part of routine practice. An example might include an ambulatory surgery center that conducts post discharge surveillance on patients following surgery. During a disaster, all ACCs should be prepared for the possibility that local public health agencies may request post

discharge surveillance related to the disaster/ event for individuals who return to their homes/ the community or are transferred to another healthcare facility. Post discharge surveillance should be included in ACC emergency management plans and should be coordinated with local response agencies, such as public health.

Surveillance Data Analysis

The results of the formal assessments/screening (i.e., active surveillance) and passive surveillance (self-reported symptoms) should be reviewed by the IP/IP designee on-site and reported to the incident commander or director of the ACC if deemed necessary. During disasters, surveillance data analysis should be performed by the IP/IP designee on-site and/or reported to the local health department at least daily or more often if the situation escalates.

The IP/IP designee on-site and the local health department should investigate increases in rates of illness identified through syndromic surveillance. Increasing infection rates should be handled by monitoring for compliance with sentinel measures (including hand hygiene and isolation precautions) and investigating potential sources of infection.

Occupational Health Issues

Healthcare staff working in an ACC may be at risk from communicable diseases and occupational exposures that can lead to infections.⁶ ACCs need occupational health policies and procedures to prevent the spread of diseases from patients and visitors to healthcare personnel during routine practice as well as during disasters. This document will only cover occupational health issues related to disasters.

Staff Immunization, Anti-infective Therapy, and Prophylaxis

ACCs need to have occupational health policies that include procedures for verifying workers' immunization status upon hire. Whenever possible, ACC workers should be brought up to date according to the adult immunization schedule as outlined by the CDC's Advisory Committee on Immunization Practices (ACIP) or in accordance with public health recommendations on all immunizations before starting work in the ACC. When resources allow, ACC staff who are not immune to vaccine preventable diseases should not care for patients with those diseases/conditions. In addition, ACC staff must receive any event-specific vaccines, such as tetanus or influenza, when medically appropriate and when available from the health department or designee (see the Anti-infective Therapy, Immunization, and Prophylaxis for ACC Patients and Visitors section, p. 24). The CDC indicates that these types of administrative controls are essential in preventing disease spread.⁶

ACC staff who develop symptoms of contagious diseases should be medically evaluated and offered

anti-infective therapy when indicated. Staff who have an exposure during work hours should be medically evaluated, monitored for signs/symptoms of illness, and their activity may need to be limited (activity restriction should be a joint IP or occupational health and public health decision [see Furloughing Staff section below]). Staff exposures may also require the use of postexposure prophylaxis (PEP), depending on the event and the disease involved. PEP guidelines should be based on information that is specific to the event/disease provided by the CDC or other organization. For some events, such as an influenza pandemic, the U.S. Department of Health and Human Services currently recommends considering offering pre-exposure prophylaxis to high-risk healthcare workers (those with direct high-risk exposures) if resources allow.⁷ If anti-infective therapy or pre- or postexposure prophylaxis is to be provided to ACC staff, the ACC protocols should outline who will receive it and how follow-up for these staff will be conducted. Protocols must also be developed that delineate prioritization plans for limited doses of anti-infective therapy, prophylaxis, or vaccination.

Vaccines, anti-infective therapy, and/or prophylaxis should be offered, when indicated, free of charge to ACC staff. ACC managers should consider offering these measures to ACC staff's family members free of charge, if resources allow. If ACC staff family members are to be offered treatment, prophylaxis, or vaccination, this should be included into ACC crisis standards of care protocols. Healthcare workers have reported that this type of incentive may increase staff's willingness to report to work during a disaster.⁸ For additional information on anti-infective therapy, prophylaxis, and immunization, see the Anti-Infective Therapy, Immunization, and Prophylaxis for ACC Patients and Visitors section.

Furloughing Staff

ACC staff should not work while ill because they can contribute to disease transmission. This is important for all disasters, but will be essential during infectious disease disasters because infected staff can contribute to disease transmission to patients and other staff.⁹ Therefore, ACC staff with symptoms of contagious diseases should be furloughed (if they have not yet started their shift) or should cease patient care activities (if symptoms develop during a shift). In addition, ACC staff may need to be medically cleared before being allowed to return to work. Criteria about when and how long to furlough staff, including how to decide when to allow staff to return to work, will depend on the specific disease with which the ACC worker is infected or is suspected of being infected. Event-specific guidelines related to furloughing and procedures for deciding criteria to allow staff to return to work should be developed by the ACC IP/IP designee or infection prevention team in conjunction with occupational health and public health officials. These guidelines should be based on information that is specific to the event/disease provided by the CDC or other organization. A list of suggested work restrictions for healthcare workers with a known or suspected contagious disease/condition are provided in Appendix G.

Vulnerable Staff

Certain healthcare staff may have an increased risk from infection during disasters (for example, pregnant staff, immunocompromised individuals, staff who are not immune to the agent/disease involved in the event, and those performing high-risk procedures, such as aerosolizing procedures during an outbreak of a droplet or airborne spread disease). The ACC emergency management plan should include protocols to protect vulnerable staff by reassignment, furlough, allocating limited supplies of PPE, or other measures. Staff who meets the criteria for being high risk for infection should be screened and/or monitored per state health department or CDC event/disease-specific protocols/information.

Cohorting Staff

During infectious disease disasters or communicable disease outbreaks that follow a disaster, it will be important to minimize the number of ACC personnel who are exposed to potentially contagious individuals. An important administrative control to accomplish this includes dedicating a cadre of healthcare personnel to work with patients who are known or suspected of being infected (cohorting staff). Whenever feasible, vulnerable staff at an increased risk from infection (see previous Vulnerable Staff section) should not be part of the cohort who will care for potentially contagious individuals. Disease-specific guidelines should be consulted during infectious disease disasters when determining the definition of “vulnerable staff.”

Blood/Body Fluid Exposures

ACCs must have infection prevention policies and procedures to reduce the risk of occupational exposure to blood and body fluids during routine activities and disasters, including the use of Standard Precautions (see the Isolation section). ACCs need to follow the Occupational Safety and Health Administration (OSHA) bloodborne pathogen standard.¹⁰ Protocols must also be developed that outline procedures for following up on staff work exposures (including testing and the potential use of PEP) and for allocating PPE when supplies become insufficient or depleted. The ACC manager in cooperation with occupational health should monitor employee work-related exposures, such as needlestick or sharps injuries or from not wearing PPE correctly. Employee exposures may increase during a disaster if workers are being given new assignments or coverage. The exact follow-up needed for staff exposures will depend on the disease/agent involved and the type of exposure. Protocols need to be developed regarding source testing following staff occupational exposures. ACCs should always follow state and federal laws related to source testing. ACCs should keep anti-infective therapies, vaccines, and prophylaxis medications on-site or have procedures in place for directing staff to another healthcare facility to receive timely postexposure follow-up.

Anti-infective Therapy, Immunization, and Prophylaxis for Ambulatory Care Center Patients and Visitors

Disasters may require the use of pharmacological interventions for ACC patients and visitors, including the use of anti-infective therapy, prophylaxis, or vaccination. This is most likely to be an issue after an infectious disease disaster, such as a bioterrorism attack, outbreak of an emerging infectious disease, or a pandemic. Protocols should be in place to administer anti-infective therapy, PEP, and/or vaccination to ACC patients or visitors with symptoms of infection or a known exposure to a potentially contagious patient/person or agent when medically indicated and when these modalities are available on-site. Case definitions of infection and what constitutes an exposure (for PEP and contact tracing) are event/disease-specific and are part of the epidemiological investigation. This information should be coordinated with medical professionals and local public health officials during a disaster. ACC patients and visitors should be encouraged to receive any event-specific prophylaxis, such as tetanus or influenza vaccine, antibiotics, or antivirals, offered by the health department. The ACC must follow local and state immunization program guidelines, including documentation mechanisms.

Anti-infective therapy, prophylaxis, or vaccination should be administered as soon as possible after exposure or the onset of symptoms, as delays in administration can decrease medication or vaccine efficacy and result in increased morbidity and mortality. As part of community emergency management, public health officials may request that ACCs function as a closed point of dispensing (POD) during a disaster, which would require

them to administer anti-infective modalities to patients, visitors, and staff. If the ACC functions as a closed POD, published recommendations related to infection prevention should be followed.¹¹ Even if the ACC does not function as a closed POD, the facility should keep anti-infective therapies, vaccines, and prophylaxis medications on-site for patients and visitors or have procedures in place for directing patients and visitors to another healthcare facility to receive rapidly the appropriate medical follow-up.

ACCs need to coordinate with local and regional emergency management agencies when attempting/ planning to stockpile or administer pharmacological measures. Written protocols are needed for prioritizing allocation of anti-infective therapy, prophylaxis, or vaccine during times of limited or depleted resources.

ACCs need to have procedures for safe storage, handling, distribution, and administration of medications and vaccines. Unsafe and/or improper practices when handling medications and vaccines can lead to HAIs or outbreaks.^{12,13} Some medications and vaccines may require cold chain techniques; therefore, the ACC must have refrigeration or cold storage units available to accommodate medication/vaccine storage even when power/electricity is interrupted/not available. The cooling system for medications/vaccines must be separate from refrigeration used for food and the temperature of the cooling system must be maintained to ensure the efficacy of the vaccine/ medication. Infection prevention techniques related

to handling pharmaceuticals need to be practiced in ACCs. Examples include the safe repackaging and preparation of medication solutions and suspensions; careful labeling, documentation, and

procedures for accessing multidose vials/containers; and following cold chain techniques. ACC staff should be educated on these procedures (see the Infection Prevention Education section, p. 71).

Visitor Management

Visitors should be limited to persons who are necessary for the patient's emotional well-being and care. Visitors, including family members, can be a source of infection and should be screened for symptoms of infection appropriate to the situation before each visit and instructed to limit their movements within the ACC. Children, immunocompromised individuals, and others at high risk of infection should be discouraged from coming to/visiting the ACC unless they are seeking care. Visitors who are ill should be instructed to return home as this has been identified by the CDC as one of the most important interventions in eliminating potential occupational exposures.² Asymptomatic/well visitors accompanying ill patients should be directed to the "sick" side/area of the triage waiting room and instructed to wear appropriate PPE;

disease-specific guidelines should be consulted during infectious disease disasters when choosing PPE.^{4,5} ACC managers should consider making an exception if the symptomatic visitor is a parent, legal guardian, or other household caregiver of a pediatric patient, assuming that the visitor is able to wear PPE, perform hand hygiene, and adhere to other infection prevention practices; this will be most critical when the ACC is short-staffed and the adult visitor is able to assist in the patient's care or provide comfort to the child. Educational materials that are language and reading-level appropriate should be made available to the family and other visitors regarding symptoms that need to be reported (Appendix D), respiratory etiquette procedures (Appendix H), and how to perform hand hygiene procedures (Appendix I).

Reporting Procedures

The results of the formal assessments/triage (active surveillance) and passive surveillance (self-reported symptoms between screenings) should be reviewed by the IP/IP designee on-site. The results should be reported to the incident commander or director of the ACC if deemed necessary. The IP/IP designee should also report the results of

the surveillance program, including reportable diseases, to the local and state health department as required in the emergency management plan and according to state and federal law. This should be done at least daily or more often if the situation escalates.

Standard Precautions²

Standard Precautions are the fundamental practices used to prevent the transmission of infectious agents during healthcare personnel interactions with patients in any healthcare setting. This includes the prevention of infection spread from healthcare personnel to patients and from patients to healthcare staff. Standard Precautions should be implemented by all healthcare workers for each patient encounter, regardless of the patient's diagnosis. Standard Precautions consist of:

- Wearing appropriate PPE when exposure to blood, body fluids, secretions, or excretions of individuals is anticipated (see the PPE section, p. 38)
- Following safe injection practices
- Handling and cleaning medical equipment that is potentially contaminated with bodily fluids in a manner that prevents transmission
- Performing hand hygiene when indicated (see Hand Hygiene section, p. 35)
- Following respiratory hygiene/cough etiquette; respiratory hygiene/cough etiquette consists of practices aimed at identifying people with signs/symptoms of respiratory illness at the point of entry

to all healthcare facilities. Respiratory hygiene/cough etiquette consists of:

- Educating staff, patients, and visitors about the spread of respiratory illnesses
- Posting signs on how to follow respiratory hygiene/cough etiquette in public areas (see Appendix H)
- Instructing individuals who are coughing and/or sneezing on the proper use of facial tissues (i.e., covering the mouth/nose with a tissue, immediate disposal of tissue, and hand hygiene)
- Providing a mask to coughing individuals
- Healthcare staff wearing a surgical/procedure mask when examining a patient or visitor with signs/symptoms of respiratory illness
- Instructing individuals to cough or sneeze into the crook of their elbow or sleeve
- Separating potentially contagious individuals by at least 3 to 6 feet from others

Transmission-based Precautions/Isolation

Isolation precautions must be implemented if a patient has a disease or condition that is communicable and transmission may not be prevented using Standard Precautions alone. Another name for isolation precautions is *transmission-based precautions*. There are three categories of transmission-based/isolation precautions: contact, droplet, and airborne precautions. Please note that multiple types/categories of isolation may need to be implemented simultaneously. Patient placement in isolation is an essential administrative control used to decrease the risk of disease transmission in healthcare facilities. The isolation category/precautions should be decided based on current recommendations from local and staff health departments, the CDC, and other organizations, such as the World Health Organization. A poster or other instructions outlining proper isolation procedures should be posted on the isolation door/area. Isolation sign examples are provided in Appendix J.

During most disasters, airborne isolation will not be needed except for hospitalized patients. It is not feasible for ACCs to implement airborne precautions during day-to-day activities due to the stringent environmental controls needed for this type of isolation. However, during an infectious disease disaster involving an airborne-spread disease, such as smallpox, ACCs may need to consider implementing protective measures for airborne isolation within the facility while still providing medical care for clients if all healthcare beds (in both hospitals and alternate care sites) are full and resources allow. Individuals infected with airborne-spread diseases should receive top priority for hospital isolation rooms/areas in any type of a disaster in order to limit disease spread.

Airborne Precautions

Airborne precautions are used for patients who have diseases that are spread by the airborne droplet nuclei route. Airborne droplet nuclei are tiny droplets that can travel long distances in the air. **Airborne isolation will be very difficult to implement in most ACCs. Some ACCs that routinely perform bronchoscopies may have designated rooms that can accommodate a patient on airborne isolation (i.e., an airborne infection isolation room [AIIR]). Whenever possible, individuals with known or suspected airborne-spread diseases should be transferred to a hospital or other medical facility that has an AIIR; these should be identified in advance as part of disaster planning. In the very rare event that individuals must receive care at an ACC during an infectious disease disaster (for example, a hurricane or flood occurring in a community at the same time as a pandemic), ACC planners/managers should consider implementing the recommendations listed below to the extent possible to create a protective environment within the ACC.**

Airborne precautions should be used for all individuals meeting the criteria for requiring airborne isolation from Appendix E and/or individuals suspected of having a known or potentially airborne spread disease, such as tuberculosis, chickenpox, measles, smallpox, severe acute respiratory syndrome (SARS), and viral hemorrhagic fever. In addition to Standard Precautions, the following should be implemented:

- Provide a mask to individuals who have symptoms of an airborne-spread disease (see Appendix E)

- Separate the individual
 - Place in a private room/area. An AIIR should be used when available. AIIRs are rooms that have specific engineering controls as outlined by the American Institute of Architects/Facility Guidelines Institute (AIA/FGI) standards. Engineering controls for AIIRs include being negative pressure (i.e., the air flows from the adjacent corridor into the patient's room), having a minimum of 6 to 12 air changes per hour, and exhausting room air directly to the outside or filtering it through a high-efficiency particulate air (HEPA) filter before recirculation.²
 - Temporary negative pressure rooms/areas can be developed using published guidelines and are permitted by federal and state codes for temporary, emergency needs; facilities engineering professionals should be consulted when attempting to institute temporary negative pressure in an ACC because the process is highly complex^{14,15}
 - Choose an area as far from others as possible or use a naturally segregated area (a hallway or wing separate from the rest of the facility)
 - Choose an area that has at least one window (the window must be > 25 feet away from air intakes or other open windows) to facilitate airflow
 - If walls do not enclose the isolation room/area already, erect some type of enclosure; materials should be chosen based on their permeability
 - Potential barrier materials listed in order of preference: drywall, particle board or other wood, plastic, portable room divider/screens, hanging drapes, or bed linens
- Secure barrier material to ceiling and floor to the extent possible
- Bleed/exhaust air from the isolation room/area to make it negative pressure compared to the rest of the ACC using one of the following methods listed in order of preference:
 - A fixed room-air ventilation system
 - Portable room-air ventilation system
 - Centrifugal blower to exhaust air outside from the isolation room/area (the unit must exhaust air out through a window [the window must be > 25 feet away from air intakes or other open windows])
 - Use floor and/or window fans to exhaust air outside the isolation room/area
 - Consult with a facilities engineer when setting up fans to create negative pressure
- Do not recirculate air from the isolation room/area with the rest of the ACC unless the air is filtered through a HEPA filter prior to recirculation; air can be filtered using one of the following methods listed in order of preference:
 - Filter air from the isolation room/area using an in-duct HEPA filter system
 - Filter air from the isolation room/area using a portable

- HEPA filter unit; the portable HEPA filter unit should be placed as close to the infected person(s) as possible, without interfering with ACC staff work flow or medical equipment in the room
- ACC workers should be told to avoid standing between the infected person and the portable HEPA unit's air intake because this can increase the worker's exposure risk
- Contingency planning should include plans for loss of electricity when a patient is in an AIIR or other protected environment for airborne isolation
- Individuals with the same disease/condition may be cohorted if isolation room/space is limited
- Keep the symptomatic individual in the isolation area/room
- Limit visitors to parents/guardians or other primary caregivers who are immune to the disease in question; parents/guardians or primary caregivers who are susceptible to the disease may be incubating the disease in question and are not permitted to visit during the incubation period for the disease in question
 - ACC managers should consider making an exception if the symptomatic visitor is a parent, legal guardian, or other household caregiver of a pediatric patient, assuming that the visitor is able to wear PPE, perform hand hygiene, and adhere to other infection prevention practices; this will be most critical when the ACC is short-staffed and the adult visitor is able to assist in the patient's care or provide comfort to the child
- Patient transport is limited to essential purposes only
 - Patients should wear a surgical/procedure mask whenever they are out of their room; infants and/or uncooperative patients may be covered with a sheet or blanket
- Healthcare staff and visitors should wear an N95 respirator or higher level respiratory protection (or masks if respirators are not available; see PPE section, p. 37) for each patient encounter/when entering the patient's room and/or when within 3 to 6 feet of the infected individual
 - The respirator should be put on before entering the room and removed after leaving the room
 - Discard respirator in general trash unless grossly contaminated with blood or bloody body fluids; if grossly contaminated, discard in appropriate bio-hazardous waste container
- Perform hand hygiene before and after contact with the individual

Contact Precautions

Contact precautions are to be used in addition to Standard Precautions with all patients meeting the criteria for requiring contact isolation from Appendix E and/or individuals known to have an infectious disease spread by direct or indirect contact with the patient or the patient's environment. These diseases/conditions include: infection from a multidrug-resistant organism (methicillin-resistant *Staphylococcus aureus* [MRSA], vancomycin-resistant *Enterococcus* [VRE], etc.), *Clostridium difficile* diarrhea, smallpox, scabies, lice, uncontrollable vomiting/diarrhea, fecal incontinence, and/or wound drainage that cannot be contained by a dressing. In addition to Standard Precautions, the following should be implemented:

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- Separate the individual
 - Place in a private room/area
 - Maintain a spatial separation from noninfected individuals (> 3 to 6 feet between beds)
 - Individuals with the same disease/condition may be cohorted if private room/space is limited
 - Keep the symptomatic individual in the private area/room
 - Patient transport is limited to essential purposes only; transporters should follow good hand hygiene practices and use gloves (and gowns if direct contact of transporter clothing is anticipated)
 - Healthcare staff should wear a gown and gloves (see PPE section, p. 37) for each patient encounter/when entering the patient's room; visitors who will provide patient care (i.e., bathing, feeding, etc.) or will have close contact with a patient on contact isolation should wear a gown and gloves (see PPE section, p. 37) for each patient encounter/when entering the patient's room
 - PPE should be put on before entering the room and removed before leaving the room
 - Discard PPE in general trash unless grossly contaminated with blood or bloody body fluids
 - Dedicated medical equipment/items should be used whenever possible
 - Reusable medical equipment must be cleaned and disinfected before being used for another patient
 - Perform hand hygiene before and after contact with the individual
- have a respiratory droplet spread disease, such as *Neisseria meningitidis*, pneumonic plague, seasonal influenza, and pertussis. In addition to Standard Precautions, the following should be implemented:
- Separate the individual
 - Place in a private room/area
 - Individuals with the same disease/condition may be cohorted if private room/space is limited
 - If patients are cohorted, keep > 3 to 6 feet between beds and draw curtains between beds (if available)
 - Keep the symptomatic individual in the private area/room
 - Patient transport is limited to essential purposes only
 - Patients should wear a surgical/procedure mask whenever they are out of their room; infants and/or uncooperative patients may be covered with a sheet or blanket
 - Healthcare staff and visitors should wear a surgical/procedure mask (see PPE section, p. 37) for each patient encounter/when entering the patient's room and/or when within 3 to 6 feet of the infected individual
 - The mask should be put on before entering the room and removed after leaving the room
 - Discard mask in general trash unless grossly contaminated with blood or bloody body fluids
 - Perform hand hygiene before and after contact with the individual

Droplet Precautions

Droplet precautions are to be used in addition to Standard Precautions for all individuals meeting the criteria for requiring droplet isolation from Appendix E and/or individuals known to

Isolation Area

Whenever possible, the ACC should use designated isolation areas/rooms in the treatment area for potentially contagious individuals. The following guidelines should be used when developing and operating an isolation area:

- Choose an area that is physically separated from the rest of the ACC by walls on all sides and a door
 - A building or area outside or near the ACC can be used
- If such an area does not exist and cannot be made inside the ACC, an isolation area can be created using plastic or other barrier material, such as curtains or large solid screens
 - Makeshift walls that are floor to ceiling (if feasible) should be created
 - Isolation signs or posters should be placed near the entrance to the isolation area to indicate that individuals should not enter the area without appropriate PPE (see Appendix J)
- In certain situations, such as individuals infected with respiratory droplet or airborne-spread diseases, additional precautions may need to be taken to ensure the isolation area has controlled air movement
 - See Airborne Isolation Section for information on air handling and ventilation recommendations for isolation areas
- Limit crossover of ACC staff between the isolation unit and the rest of the ACC occupants
 - Whenever possible assign dedicated ACC staff (e.g., healthcare workers, housekeeping, custodial) to provide care for potentially infectious individuals and restrict these staff from working with noninfectious individuals in the ACC (cohorting)
 - Dedicate an entrance(s) or passageway(s) for infectious individuals when feasible; this promotes separation as well as the

ability to triage those who have been working with potentially infectious patients¹⁶

Placement of Individuals

Individual placement within the ACC for isolation should be determined by review of the Syndromic Surveillance Assessment/ Triage Form (Appendix C) and the Infection Control Triage results (Appendix E). Symptomatic individuals should be cohorted based on their isolation precaution category (see Appendix E).

Arrange all beds/stretchers/cots so that individuals are separated by putting a minimum of 3 to 6 feet between individual resting surfaces to prevent the spread of infections.

Patient Transfer

Patient transfer can occur internally within the ACC or externally with local healthcare facilities. When a patient requires internal transport, isolation status must be communicated to the receiving department/area. In the event a patient needs to be transferred to an external facility, the on-site IP or IP designee should communicate the infected individual's disease status and the need for precautions to the ACC director and personnel at the receiving facility. Whenever possible, isolation precautions should be included with/ written on the transfer document. The IP or IP designee should maintain responsibility to stay in contact with the receiving facility in relation to the patient's diagnosis for follow-up. The ACC must have a coordinated process that facilitates communication between the ACC and receiving facility in the event a change in the patient's condition has infection transmission implications for the ACC. Precautions to take during transport are outlined in the Isolation section, p. 29.

Quarantine

Quarantine involves restricting the movement of individuals as a means of preventing infection spread. Quarantine differs from isolation in the type of individual being physically separated from others. Isolation is used when a person has symptoms of a communicable disease. Quarantine is implemented when individuals or groups are suspected of having been exposed to an infectious disease or contagious individual, but are not yet showing signs of infection.⁴ Quarantine will only be needed during infectious disease disasters and, even then, only rarely will it likely be used.

On-site (i.e., work) quarantine at an ACC is not recommended because these facilities lack the

ability for overnight stays. If ACC workers need to be quarantined, they should be directed to community-based facilities (community-based quarantine) or their homes (home quarantine). The decision regarding what type and duration of quarantine, if any, will be implemented for ACC workers will be made by local public health officials in conjunction with ACC managers. It is important to note that quarantine is a legal action. Therefore, it should only be implemented in collaboration with local public health and must follow state and federal laws.

Hand Hygiene²

One of the most important measures for preventing the spread of pathogens is effective hand hygiene, and this should be practiced in all healthcare settings. Hand hygiene is defined as the process of removing or destroying microorganisms on the hands. It consists of handwashing (using soap and water) and alcohol-based hand rubs (ABHR; using a waterless, alcohol-based hand hygiene product such as gels, foams, and liquids that contain at least 60% alcohol).² When hands are visibly dirty or soiled, handwashing is required because the mechanical action removes potentially infectious material from the skin. When hands are not visibly soiled, ABHRs may be used for hand hygiene because they are effective, less drying to the skin, and faster/more convenient compared to handwashing. One exception is when treating patients during a *C. difficile* outbreak, when handwashing is more effective than ABHRs in the physical removal of organisms. ABHRs will likely play a significant role in hand hygiene during disasters when water resources may be limited.

In general, hand hygiene is required whenever significant hand contamination is possible and the spread of pathogens through cross-contamination may occur. This includes activities involving contact with mucous membranes, blood or body fluids, secretions, or excretions. Also, hand hygiene is recommended after touching inanimate sources, which are likely to be contaminated with virulent or epidemiological important microorganisms. Hand hygiene is crucial following contact with any patient. A process should exist to assess the adequacies of the hand hygiene capabilities. Based on the assessment, appropriate measures should be instituted. If water becomes limited during a disaster, staff, patients, and visitors should be encouraged to use ABHRs

rather than handwashing with soap and water except when hands are visibly soiled.

Hand hygiene should be performed for the following activities:

- Before and after patient care
- During patient care, when moving from dirty tasks to clean tasks
- Before and after eating, drinking, and touching the face or mouth or eyes
- After contact with the patient's environment
- Before and after preparing food
- After using the toilet or changing a diaper
- After contact with respiratory secretions and facial tissues
- Before and after contact with wounds
- After handling soiled clothes and bed/stretcher/cot linens
- After cleaning up vomitus, fecal accidents, or other body fluid spills
- After cleaning and disinfecting environmental surfaces
- After removing gloves, gown, and face shield/eye protection
- Before and after removing respirator or mask
- Before entering and when leaving the common activity area, such as children recreation area (see Toys section)
- After handling shared medical equipment or toys
- After visiting or handling an animal (see Animal Management section)

- After activities in which the hands become visibly soiled

Hand hygiene products/areas should be conveniently located throughout the facility. In areas where sinks and/or running water are not available, ABHR hand hygiene stations can be used. ABHR hand hygiene stations consist of ABHR products, facial tissues, a trash can, and hand hygiene signage. Hand hygiene products/areas should be located:

- At or near every entrance to the ACC
- In or just outside every isolation room/area, which may require more than one station in a large room used for isolating several symptomatic individuals
- In or near every patient room
- Near the restrooms
- Near the food preparation and/or kitchen area
- Near the eating area
- As needed throughout the facility

During infectious disease outbreaks and/or whenever resources allow, hand hygiene compliance should be monitored. Hand hygiene educational posters should be located inside or near the hand hygiene stations and/or restrooms. Staff should instruct patients and visitors on hand hygiene, as part of patient education (see Infection Prevention Education Section, p. 71).

Hand Hygiene Technique

Instructions for performing hand hygiene are outlined in Appendix K.

Hand Hygiene Signage

Hand hygiene notices/signs should be posted near all washrooms; food preparation, storage, or serving areas; and hand hygiene stations. Appropriate signage should be used as a reminder for hand hygiene compliance. See Appendix I for samples of appropriate signage for handwashing and use of ABHR.

Personal Protective Equipment

PPE is gear designed to protect the wearer from exposure to microorganisms. Examples of PPE include gloves, gowns, goggles, face shields, masks, and respirators. Choose PPE based on the procedure being performed and the mode of transmission of potential agents² (see Appendix E). For example, if performing tasks in which hand exposure to any body fluid is expected—when cleaning an individual’s wound, for example—gloves should be worn. If splashing or spraying is expected, such as when a urine collection bag is emptied, a gown, gloves, and protective eyewear should be worn.²

Different diseases require different types of PPE based on how the agent is transmitted.² This can range from using gloves only to wearing full PPE. For most encounters with patients, when the potential for splashing of blood or body fluids is not present, routine use of gloves and hand hygiene will be sufficient to protect an individual from infection. For some individuals and some procedures, additional PPE will need to be worn. Appendix E outlines syndromes for which additional precautions are needed. The Isolation section outlines the appropriate PPE for each of the isolation categories. Donning and doffing procedures for PPE are shown in Appendices L and M. The CDC indicates that PPE is the last line of defense in preventing infection transmission in healthcare settings. Other important interventions, such as eliminating potential exposures, and implementing engineering and administrative controls are also essential to prevent disease transmission; these actions will be vital during disasters when shortages of PPE are likely to be present. PPE needed for each isolation category should be included on signage.

Gloves

Nonsterile latex-free procedure gloves should be used when contact with blood or body fluids, nonintact skin, contaminated surfaces and medical devices, or mucous membranes is anticipated. Gloves must be worn to perform venipuncture or other vascular access procedures, and as required for the practice of medical asepsis. A new pair of gloves should be used for each patient encounter, including between tasks and procedures on the same patient, when moving from a dirty task to a clean task, and after interaction with a symptomatic individual during screening.

Gloves should not be worn:

- For the care of more than one patient
- Away from the bedside or lab bench
- At the nursing station
- To handle charts, clean linen, clean patient equipment, or patient care supplies
- In hallways or elevators, unless providing patient care in transit; pushing a wheelchair or bed/stretchers does not constitute *patient care*

Recommendations for glove use²:

- Use a new pair of gloves when contact with blood or body fluids, nonintact skin, or mucous membranes is anticipated.
- Change gloves when they are heavily soiled with blood or other potentially infectious material, or if they are torn.
- Change gloves to prevent cross-contamination of body sites; for example, when cleaning an individual’s

wound, gloves should be changed before touching another part of the individual or performing other tasks. Always work from clean areas to dirty or heavily contaminated areas of the body. For example, blood pressure should be taken before cleaning a wound.

- Do not touch your body or surfaces in the ACC environment with contaminated gloves.
- Always change gloves after providing care to each individual and perform hand hygiene immediately after removing gloves.
- Although gloves keep most microorganisms from getting on hands, they are not completely protective. Always perform hand hygiene before and after removing gloves.
- Do not wash gloves.

There are currently no recommendations regarding the reuse of gloves.²

Gowns

An isolation/procedure gown should be used when splashing or spraying of clothes or the body with blood or body fluids is anticipated. Gowns worn to prevent splashing or spraying of clothing must be made of an impervious material. If resources allow, a new gown should be used for each encounter with a symptomatic individual. As resources dwindle, gowns may be reused by the same ACC worker for the same symptomatic individual or group of cohorted individuals as long as the gown integrity is not compromised. If gowns are reused, consideration should be given to storage or placement between uses to maximize its use as well as to prevent inadvertent contamination.

Recommendations for gown use²:

- Wear an isolation/procedure gown to protect clothing, arms, and other body

areas when splashing or spraying of clothes or the body with blood or body fluids is anticipated.

- The isolation/procedure gown should cover the torso area, fit loosely over the body, and have long sleeves that fit snugly at the wrist.
- The opening of the gown should always be in the back.
- Tie or fasten the gown in the back to keep it in place.
- Remove the gown when finished providing care or treatment to an individual (see Appendix L for proper PPE donning and doffing procedures).
- Take the gown off either in the doorway or in the area immediately outside the isolation or triage area in the ACC, depending on where the gown was used/worn.
- Avoid touching the outside of the gown during use and removal because it is contaminated.
- Discard gowns in the regular trash after use unless they are soaked with blood or other body fluids; grossly contaminated gowns should be discarded as regulated medical waste in a red/biohazard container (see Waste Management section, p. 52).

Eye Protection

Eye protection is designed to protect the wearer from damage or exposure to the eye. Various types of eye protection devices exist for a number of occupational settings. For healthcare infection prevention purposes, eye protection is used to prevent exposure to infectious agents through the mucous membranes of the eye. Infectious agents can be introduced to the eye either directly (e.g., blood splashes, respiratory droplets generated during coughing or suctioning) or from touching the eyes with contaminated fingers or other objects. The eye protection chosen should be

based upon the task being performed, other PPE being used, and personal vision needs. Prescription eyeglasses (including safety glasses) and contact lenses do not provide adequate eye protection from infectious agents and are not considered eye protection in healthcare settings, including ACCs.^{2,17} Infection prevention eye protection devices are as follows.

Goggles¹⁷

- Goggles must fit snugly, particularly around the corners of the eye and across the top of the goggles by the eyebrow
- Indirectly vented goggles are the preferred type of goggles for preventing exposure to infectious agents
- Directly vented goggles should not be used for infection prevention purposes because they can allow fluid penetration leading to an exposure

Face Shields

- Face shields provide protection to eyes as well as other facial areas
- Whenever possible, choose a face shield that has full facial coverage, including the crown and chin, and one that stretches from the front of one ear to the other²
- Reusable face shields are preferable to disposable ones because they provide better protection for the wearer¹⁷
- Light-weight disposable face shields that attach to the front of a surgical mask are the least protective form of eye protection¹⁷

Full-face Respirators

- Respirators that cover the entire face, such as full face-piece elastomeric respirators and powered air-purifying respirators (PAPRs), provide highly effective eye protection as well as respiratory protection

- Selection of this type of PPE should be based on an assessment of the exposure hazard and availability of resources in an ACC

Removal and Reprocessing of Eye Protection

Eye protection should be removed by grasping the cleanest part of the item, which consists of the part that holds the device to the head (ear pieces, ties, elasticized bands, headbands, etc.).^{2,17} Do not remove eye protection by grasping the front or sides of the device because these surfaces are considered contaminated. Proper PPE removal is illustrated in Appendix L.

Light-weight disposable face shields that attach to the front of a surgical mask are considered single-use items and should be discarded after use. There are no recommendations for reuse of disposable face shields. Reusable goggles should be assigned to a single worker to ensure proper fit and prevent transmission to another person. All types of reusable eye protection, such as goggles, elastomeric respirators, and PAPRs, must be disinfected between uses and when shared between users; see manufacturers' recommendations for instructions on decontamination/disinfection of reusable eye protection.¹⁷ Reusable eye protection should be cleaned and disinfected in a dirty utility room and gloves should be worn during the cleaning process.¹⁷

Respirators and Masks

Respirators and masks are used to protect the wearer from exposures to droplet and airborne-spread diseases. It is important to choose the correct respiratory protection. The following discussion and recommendations for use of respiratory protection presumes that administrative and environmental controls addressing potential airborne infectious agents (patient placement, cohorting, etc.), as described above, have been implemented to the extent possible.

Respirators are not the same as surgical masks. Surgical or procedure masks are loose-fitting and allow air particles to leak in around the edge of the mask.¹⁸ Surgical or procedure masks are designed to help keep potentially infectious droplets from being spread by the person wearing them, and to keep sprays from coughs and sneezes from reaching the mouth and nose of the wearer. In contrast, respirators (usually an N95 or higher level respirator) are designed to protect a person from breathing in very small particles, which might contain viruses or bacteria. They fit tightly against the face so that most of the air inhaled goes through the filtering material.¹⁵

A respiratory protection plan should be in place for the ACC. ACC planners should consider including fit testing of N95 respirators as required under OSHA's Respiratory Protection standard (29 CFR 1910.134).¹⁹ The fit testing program should include testing the fit of the respirator, instructing the wearer on proper fit checking, and informing the wearer of the limitations of the respirator. If the ACC is providing a different model of respirator than the one for which the staff member is fit tested, they must be re-fit tested for the respirator provided by the ACC. During times of severe shortages of respirators, fit testing may be temporarily waived for staff who are not at risk from severe infection complications when the personnel are performing tasks that are low risk for infection transmission (that is, not aerosol-generating procedures).²⁰ The ACC staff should be instructed to perform a seal check when using the non-fit-tested N95 respirator and the facility should conduct fit testing on the employees as soon as possible.

ACC plans should include processes for periodically assessing sustainability and utilization of resources during a disaster, including the use of respirators and surgical/procedure masks for ACC staff, patients, and visitors. Respirator and surgical/procedure mask selection depends on the likely route of transmission as noted in the isolation category for an infected individual (see Appendix E). When resources allow, a new

disposable respirator or surgical/procedure mask should be worn for each encounter with an infected individual or entrance into the isolation area within the ACC. Reusable respiratory protection may be used by ACC workers in lieu of disposable surgical/procedure masks or respirators, using the following recommendations.¹⁶

- Reusable respirators include elastomeric respirators and PAPRs
- If reusable elastomeric respirators are used, these respirators must be decontaminated according to the manufacturer's instructions after each use
- PAPRs may be considered for ACC workers stationed in the isolation area
 - PAPRs have the advantages of providing eye protection, being comfortable to wear, and not requiring fit testing; however, hearing (e.g., for auscultation) may be impaired, limiting their utility for clinical care
 - PAPRs must be decontaminated between uses; see manufacturers' recommendations for instructions
 - Training is required to ensure proper use and care of PAPRs
 - Power sources within the ACC must be identified for recharging PAPRs between uses

Regardless of respirator or surgical/procedure mask resource par levels, the following guidelines should be used when determining respirator/mask usage.

- Workers should receive training on how to put on, use, and take off the respirator or surgical/procedure mask, including how to:
 - Put on and use the respirator or surgical/procedure mask (see Appendices L and M)
 - Perform hand hygiene prior to putting on the respirator or mask

- Avoid contamination during use by not touching the outside of the respirator or mask
- Use a face shield that can be worn over a respirator or mask to protect it from contamination with blood or other body fluids
 - Remove the face shield so as to prevent respirator/mask contamination
 - Decontaminate the face shield between uses
 - Perform hand hygiene after removal of the face shield and before removing the respirator or mask
- Check the seal of the respirator for adequacy of fit
 - Seal check processes are outlined by the manufacturer
- Remove and dispose of the respirator or surgical/procedure mask (see Appendices L and M)
 - Respirator or surgical/procedure mask should be discarded after use (i.e., after worn in the presence of an infected individual)
 - Discard respirator or surgical/procedure mask sooner if it becomes obviously soiled or damaged (e.g., creased or torn)
 - Perform hand hygiene after removing the respirator or surgical/procedure mask

Masks and respirators are only one strategy for preventing infection spread. The CDC has outlined a hierarchy of control measures to prevent disease spread, with respiratory protection and other PPE as the last line of defense.²¹

During infectious disease disasters (bioterrorism, outbreaks of emerging infectious diseases, or pandemics), ACCs should implement source control, engineering, and administrative controls

as well as eliminating potential exposures as methods of decreasing the need for respirators among healthcare personnel. This will aid in the conservation of respirators for staff most at risk from severe complications from infection and those performing high-risk procedures, such as aerosol-generating procedures. Examples of interventions to eliminate potential exposures and implement engineering and administrative controls include control methods outlined in other parts of this document, such as screening patients and visitors for illness, promptly isolating potentially contagious individuals, and offering vaccinations to healthcare personnel.

Shortage of Respirators and Masks

Guidance on developing a strategy/protocol for extending the use and/or reusing respiratory protection during disasters has been outlined by APIC.²² The following section is quoted directly from that document.

“Extended use of respiratory protection is defined as the wearing of a disposable respirator during serial patient encounters without the removal or re-donning of the device between encounters.²⁰ Reuse of respiratory protection consists of removing and re-donning the device between encounters.²⁰ Both of these actions pose a transmission risk to healthcare personnel due to potential respirator contamination. This transmission risk can be minimized if healthcare personnel adhere stringently to hand hygiene before and after handling the respiratory protection device.

If supplies are likely to be limited, healthcare organizations should conserve supplies as follows, considering vaccine availability for the specific pathogen:

1. Strongly encourage healthcare personnel to be vaccinated against the agent involved in the infectious disease disaster

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- (such as influenza vaccine during an influenza pandemic), when such vaccine is available. This will create an immunized cadre of healthcare personnel for whom respiratory protection will be less critical.
- 2. Extending the use or reusing respiratory protection is preferred over prioritizing the allocation of masks and N-95 respirators based on exposure risk
- 3. Extended use is preferred over reuse²⁰

Practices for extending the use and/or reusing a respirator:

- The respirator should only be worn and/or reused by a single wearer
- The respirator should not be removed, adjusted, or touched during patient care activities
- Avoid contamination during use by not touching the outside of the respirator
- Care should be taken to prevent touching the inside of the respirator
- The respirator should be discarded after being used during an aerosol-generating procedure
- The respirator should be discarded if it becomes grossly contaminated with the patient's body fluids, including blood or respiratory secretions. Note: This may be difficult for the wearer to discern. Healthcare personnel should be aware that even if not visibly soiled, the external surface of the respirator is considered to be contaminated.
- The respirator must be discarded if it becomes obviously soiled or damaged (e.g., creased, torn, or saturated) or if breathing through the device becomes difficult
- Consider using a surgical/procedure mask²³ or face shield²⁰ over the respirator to reduce/prevent contamination of the device. If masks are also in short supply, face shield use should be encouraged to help conserve masks.

- Care should be taken during removal of the mask or face shield to ensure the respirator is not contaminated
- The surgical/procedure mask must be discarded after a single use. If reusable, the face shield must be decontaminated between uses
- Hand hygiene should be performed after removing the face shield or mask and before removing the respirator
- Perform hand hygiene before and after handling/touching the respirator

The following are examples of situations/locations in which extended use may be both practical and feasible when supplies are limited: triage clinics/areas, in-patient units that house large numbers of infected patients, or isolation units dedicated to patients with known or suspected infections. Each facility should conduct a risk assessment and develop a contingency plan that includes examination of their patient population, healthcare personnel immune/vaccination status, and physical structure in terms of the feasibility of implementing an extended and/or reuse protocol.

In addition to the above, the following recommendations should also be followed when reusing a respirator:

- The respirator should be removed carefully to avoid cross-contamination
- Personnel should be instructed to use hand hygiene after putting the respirator on and following removal/placement in a storage location
- The respirator should be stored in a clean, dry location that prevents it from becoming contaminated and maintains its physical and functional integrity²⁴
 - Store the respirator in a breathable container, such as a paper bag, or hang the respirator in a designated area²⁰
 - If the respirator is to be stored in a container, the container/bag should be labeled with the user's name

- The container/bag is a single use item because the inside can become contaminated due to storing a used respirator; therefore, the container/bag should be discarded after the respirator is re-donned²⁵
- Consider labeling the respirator with the user's name to prevent staff from reusing another's respirator; labeling should be written on the straps to prevent damage to the respirator²⁴
- The respirator should be inspected before each use to ensure its physical integrity is intact and a seal-check should be performed by the healthcare personnel to ensure an adequate fit
 - Respirators that are damaged or cannot achieve an adequate fit during the seal check should be discarded

Prioritize allocation of N-95 respirators and masks based on exposure risk

If respirator/mask supplies are scarce or insufficient even after the facility has obtained additional supplies from local, regional, or national sources, examine the feasibility of reusable respirators (PAPRs, elastomeric respirators, etc.), and implement extended use and/or reuse procedures, protocols should be followed to prioritize healthcare personnel to receive respirators/masks based on their exposure risk; *exposure risk* should be determined based on the healthcare facility's exposure risk analysis that is part of emergency management planning, including personnel's immune status.

Healthcare organizations should develop *prioritized respirator use* protocols as follows:

1. Facilities should maintain a reserve stock of respirators/masks that will be used during aerosol-generating procedures

and/or with patients who are known or suspected of being infected with an airborne microorganism, such as *Mycobacterium tuberculosis*. Consider a contingency plan wherein reusable respiratory protection, such as PAPRs, is available for personnel who need to care for those with suspected or active TB disease.

2. Airborne-transmitted diseases: Priority for respirator use should be given to healthcare workers providing care for patients with obligate and preferential airborne-transmitted diseases, such as active tuberculosis disease
 - Laboratory studies indicate that surgical and procedure masks do not offer appropriate respiratory protection against small particle aerosols (i.e., airborne droplet nuclei) and should not be used unless particulate respirators are not available when dealing with diseases transmitted by the airborne route; *if a particulate respirator is not available, use a tightly fitting surgical/procedure mask*²⁶
3. Aerosol-generating procedures: Priority for respirator use should be given to healthcare personnel performing aerosol-generating procedures^{20,21,25,27}
 - During disasters involving an airborne-spread disease, aerosol-generating procedures should only be performed by staff wearing an N95 respirator or other respirator protection that is at least as protective as an N95 respirator^{21,25}
 - If the healthcare facility is completely out of respirators (disposable or reusable) and aerosol-generating procedures must be performed on a patient with an airborne-spread disease, the healthcare personnel involved in the procedure should wear a surgical/procedure mask. Use of

a surgical/procedure mask in this type of dire situation is preferable to using no facial protection at all. **It is important to note that this scenario should never occur;** healthcare facilities should use contingency planning to ensure they have adequate respiratory protection supplies for staff through obtaining additional respirators, utilizing reusable respirators, extending the use and/or reusing disposable respirators, and implementing control measures (such as vaccinating personnel) to decrease the need for respirators. In addition, healthcare personnel in this situation should follow infection prevention strategies to decrease their risk of infection, including following Standard Precautions and performing hand hygiene.

Aerosol-generating procedures that pose a higher risk of exposure than routine patient care activities consist of the following:

- Intubation, extubation, bronchoscopy, sputum induction, cardiopulmonary resuscitation, open suction of airways, and autopsy^{21,25,28}

Other medical procedures have been identified as having the potential to generate limited amounts of respiratory aerosols, although the risk of infection transmission associated with these procedures varies, depending on the disease involved.^{21,29} Disease-specific guidelines should be consulted when determining if the following aerosol-generating medical procedures should be considered high risk for infection transmission and thus receive priority for respirator usage:

- Administering nebulizer treatments, collecting nasopharyngeal samples, use

of high-flow oxygen, positive pressure ventilation via face mask (e.g., BiPAP, CPAP), and high-frequency oscillatory ventilation

- When feasible, it is preferred that staff who have not been immunized against the specific agent be given priority for respirators over immunized staff when conducting aerosolizing procedures on patients who are known to be infected with the agent involved in the infectious disease disaster during times of limited supplies (i.e., non-immunized personnel should be provided a respirator; immunized would be provided a surgical/procedure mask)
4. Healthcare personnel at risk of infectious complications: Allocating limited supplies of respirators should be prioritized for healthcare staff who are at greatest risk from complications of infections
 - The risk analysis will vary from event to event, depending on the infectious agent involved, but should include assessing the task being performed in terms of the duration and intensity of the encounter (i.e., personnel exposure risk), personnel immune/vaccination status, and personnel health status that may affect their risk of infection (such as being immunocompromised, pregnant, etc.)
 5. Healthcare staff who are not in the high-exposure/priority groups (i.e., those who are not assigned to care for patients who are known or suspected of being infected with an airborne transmissible disease, involved in routine patient care that does not involve aerosol-generating procedures, and/or those who do not meet the criteria for being at high risk of complicated infection) should be provided with FDA-cleared surgical/procedure masks²⁰
 - Switching to an FDA-cleared surgical/procedure mask for

- healthcare staff who are not in the high-exposure/priority groups during *prioritized respirator use* mode is considered a temporary measure only. Every effort should be made to obtain additional respirators as soon as possible
6. If the facility is unable to obtain or conserve N95 respirators per the *prioritized respirator use* protocols above and/or supplies of N95 respirators are depleted despite conservation efforts:
 - Surgical/procedure masks can provide benefits against large droplet exposure, and should be worn by healthcare personnel when providing care to patients who have signs/symptoms of a respiratory illness.³⁰ In time of such dire shortages, they should be used in order to reduce some exposure.
 - Select surgical/procedure masks that can be tied tightly or have elastic straps (not ear loop masks that do not form a seal)
 - Disposable surgical/procedure masks should fit the user's face tightly and be discarded immediately after use. If the mask gets wet or dirty with secretions, it must be changed immediately²⁷
 - Perform hand hygiene before and after touching/handling the mask
 7. If supplies of surgical/procedure masks are insufficient or unavailable:
 - If supplies of FDA-cleared healthcare surgical/procedure masks become depleted:
 - Consider the use of full face shields that protect the wearer's eyes and mouth for staff who have been immunized against the specific agent involved in the infectious disease disaster
- rather than having them use a respiratory protective device when caring for a patient who is known to be infected with the agent involved in the infectious disease disaster; this will help conserve the supply of respirators/masks for personnel at high risk from complications of infection (i.e., non-immunized personnel)
- Respirators that are FDA-cleared for general public use during public health emergencies can be used in healthcare settings, but do not provide the same level of protection as N95 or higher level respirators; it is not known if FDA-cleared respirators are more protective than FDA-cleared surgical/procedure masks.³⁰ Respirators that are FDA-cleared for general public use during public health emergencies should only be used in healthcare settings in dire circumstances. All other efforts at conserving and obtaining NIOSH-certified respirators or FDA-cleared surgical/procedure masks should be made before proceeding with this type of respirator in healthcare settings
 - Controversies exist regarding how to proceed when supplies of N95 or higher level respirators, FDA-cleared healthcare surgical/procedure masks, and masks/respirators that are FDA-cleared for general public use during public health emergencies are depleted/unavailable¹⁸
 - Review of the scientific literature identified a published letter detailing construction of a handmade, reusable cotton mask. This type of mask is currently available in Asia and may be

constructed quickly during a pandemic if all other resources have been exhausted. Cloth/woven masks may provide some level of protection based on anecdotal and/or limited evidence.^{31–33} APIC hesitates to discourage their use if all other mask/respirator options have been exhausted by the healthcare facility, but cautions that these masks are not as protective as NIOSH-certified respirators or FDA-cleared surgical/procedure masks

- Dust masks, such as those commonly sold at home improvement stores, have been shown to be less protective than NIOSH-certified N95 respirators and therefore should not be used in healthcare settings to prevent the transmission of infectious agents.³⁴ There is no evidence regarding dust mask performance versus an FDA-cleared surgical/procedure mask in preventing

infection transmission; therefore, no recommendation can be made regarding their use in healthcare facilities

Regardless of the availability of respirators or surgical/procedure masks, environmental control measures, respiratory hygiene/cough etiquette, and extreme vigilance with proper hand hygiene are critical in minimizing the likelihood of exposure.

Research into respiratory protection is continuing and infection preventionists should keep abreast of developments from the CDC, FDA, and IOM concerning the use of masks and respirators developed for the public in the likelihood of a pandemic or other conditions requiring respiratory protection.^{18,23,30–33}

Recommendations on conserving respirators through extending the use and/or reusing respirators are changing rapidly as new scientific evidence is discovered. ACC managers should consult APIC, CDC, OSHA, and other professional agencies when developing respiratory protection protocols to ensure that accurate, up-to-date information is being used.

Specimen Collection, Handling, and Transport^{2,27}

If the ACC is a diagnostic laboratory or provides laboratory services on-site, the ACC needs to have infection prevention protocols related to specimen collection, handling, and transportation for day-to-day activities as well as procedures specific to disasters. ACC staff should regard all patient specimens as potentially infectious; specimens should be collected, handled, and transported following standard infection prevention precautions whenever feasible during disasters.

Procedures

- ACC staff who collect specimens from patients should wear PPE as indicated by disease-specific precaution recommendations.^{2,17}
- Collection of respiratory specimens that might lead to aerosol generation should be performed with environmental controls in place, including the use of AIIR/negative pressure or well-ventilated areas that are isolated or cohorted away from other patients and staff. Recommendations for environmental controls should follow disease-specific recommendations.³⁵
- Specimens for transport must be placed in leak-proof bags/containers, with separate sealed sections for the specimen and identifying paperwork to prevent contamination of paperwork while keeping specimen and paperwork together.
 - Consider the use of specimen transport bags that have a red biohazard symbol to indicate that the bag contains potentially infectious material.
- When high-risk pathogens or time-sensitive specimens are being transported, the laboratory should be notified by telephone or other means that the specimen is en route.
- Chain of custody procedures must be followed during bioterrorism events for specimen collection and handling.⁵
- Specimen tests that are beyond the scope of the ACC laboratory should be coordinated with local and state health departments.
- ACC staff responsible for collecting, transporting, and handling specimens should be trained in safe handling and spill decontamination procedures. Be aware that some pathogens will require very specialized handling procedures. ACCs should consult disease-specific recommendations from the CDC and state health departments for specimen collection, handling, and transport guidelines.
- If proper storage and/or transport of specimens to another facility for processing cannot be guaranteed due to the circumstances of the disaster, ACC staff should carefully consider the safety and utility of collecting potentially infectious material from patients prior to obtaining specimens. Patients may require transport to a hospital or other medical facility if the ACC cannot safely accommodate laboratory collection and handling.

Water Management

ACCs may experience a large need for water during disaster response. In addition, some disasters, especially a natural disaster, such as a flood or hurricane, may result in compromised municipal water supply. Microbial contamination of water poses an extensive health risk; safe water reserves must be identified and available to ACCs. Backup supplies of potable water for human consumption, sanitation, cleaning and disinfecting medical equipment, hygiene, and necessary medical treatments will be essential for ACCs during a disaster. Having adequate supplies for water for hand hygiene purposes is especially important during all disasters. Recommendations for hand hygiene protocols when water supplies are insufficient are outlined in the Hand Hygiene section.

Water Usage

Depending on the scope of care provided at the ACC, water allocations and utilization will vary. The type of patients housed at the ACC will help determine the amount of water needed. Sites performing dialysis and surgery will have a greater need for water than those handling nondialysis patients or surgical procedures. Guidelines for estimating the amount of water needed for disasters have been published by responding agencies.³⁶

Water Collection and Storage

If community disaster planners store water for use in ACCs during a disaster, care should be taken to keep the water free from microbes and safe for consumption and hand hygiene.

When storing water using old/used containers (cans, jars, bottles, glasses), the following recommendations should be followed³⁷:

- The container should be dated and the water replaced every 6 months
- Clean the container surface with soap and water then rinse before use
- Clean the inside of container with a bleach solution
 - Bleach solution: Add 1 teaspoon household chlorine bleach (5.25% sodium hypochlorite) with 1 cup water
 - Scented, color-safe, and/or bleach containing soap should not be used to treat water for human consumption³⁸
- Cover container and agitate, allowing solution to contact all inside container surfaces
- Keep the container covered and allow it to sit for 30 minutes; rinse with potable water
- Label container as “DRINKING WATER” and mark the date prepared on the label
- Store at ambient temperature, away from heat and direct sunlight, and away from toxic substances such as gasoline or pesticides

If bottled or running water is not available, alternate sources of water/fluids may be used. Melted ice and canned fruit or canned vegetable juice can be excellent sources of fluids

but care must be taken to prevent microbial contamination.

- Water from the melted ice from a clean commercial source, such as an ice machine or a freezer, can be used
 - Melted ice from outdoor sources, such as icicles, should not be used for consumption
- Juice from canned fruit, vegetables, or other canned products are potential sources of liquids; expiration dates on the cans should be checked before the food or liquid is consumed
- Water from a toilet tank (not the bowl) may be used if additional chemicals, such as bluing, have not been added³⁸
- Swimming pool or spa water can be used for hygienic purposes, but cannot be consumed

Water Decontamination

Attention should be paid to public service announcements (PSAs) regarding the compromise of the municipal water supply. Should this occur, nonpotable water must be decontaminated before use. There are two basic methods for decontaminating water: boiling and chemical treatment. Boiling water is the preferred method for water decontamination. The processes for decontaminating water are outlined in Appendix N.

Water from Local Reservoirs, Lakes, and Rivers

Water from local streams or lakes should be considered contaminated and water from these sources should be decontaminated before being consumed. Avoid water with floating material, an odor, or dark color.³⁶ Let the water stand before beginning treatment to allow suspended particles to settle to the bottom. Remove

suspended particles using a straining device, such as a coffee filter or layers of clean cloth. Prior to using a straining device, a decanter can also be used to separate settled particles from the water. After suspended particles are removed, follow procedures for water decontamination.

Well Water

If the ACC will rely on well water during a disaster, especially after a natural disaster, such as a flood or hurricane, special precautions must be taken to ensure that the water is safe for consumption. The well water should be tested before consumption. Testing and decontamination of well water requires at least 48 to 72 hours so other water sources (see Water Decontamination section) should be used in the interim.³⁹

- If the water has a chemical or fuel odor, it should not be used until the contamination in the well has been removed
- Remove floating debris from water using a grappling hook, net, or long-handled scoop
- If sand or silt are present, remove the well pump and clean it before use
- Scrub the sides of the well using a chlorine solution (1 teaspoon unscented household chlorine bleach [5.25% sodium hypochlorite] with 1 cup water) then rinse with clean water
- Empty polluted water from well by pumping or bailing until the water is clear
- Decontaminate the well water using a chlorine solution (see Appendix N); pour the chlorine solution down the well in a circular pattern, ensuring contact with all sides of the well
- If possible, place a garden hose that is connected to an outside faucet into the well and run the water for 15 minutes to mix the chlorine solution properly

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- For wells connected to a plumbing system:
 - Open all faucets and pump water until you notice a strong odor of chlorine at each faucet; when chlorine is smelled at each faucet, stop the pump and allow the chlorine solution to sit in the well and plumbing system for the proper time (see Appendix O); if no chlorine is smelled after 15 minutes, increase the amount of chlorine used the first time and repeat the procedures
- For wells with no plumbing system:
 - After the chlorine solution has sat in the well for the recommended period, turn on the pump, attach a hose to an outside faucet, and direct the water to a designated area away from the well, water tanks, and streams; run the water until the chlorine smell disappears
- Well water from a disinfected well should be tested before consumption; wait at least 48 hours after well disinfection to test the water; water testing for coliform and either *Escherichia coli* or fecal coliform bacteria should be performed in conjunction with local health officials
- Retest the well water 2 to 4 weeks after disinfection

Food Safety

Food needs to be made available to ACC patients and staff, but can pose an infectious disease risk if not stored, prepared, and handled appropriately. ACC planners should involve registered dietitians and/or licensed sanitarians when developing formal written plans for obtaining, storing, rotating, and dispensing food supplies. Dietician and sanitarian services should be coordinated and made available through local and state public health agencies and/or community emergency management. Only infection prevention issues specific to food safety are covered in this document.

Safe Handling of Human Food

The following are recommendations for safe storage, preparation, and handling of human food⁴⁰:

- Symptomatic ACC workers should not prepare or serve food (see Syndromic Surveillance section)
- Store in a dark, dry, cool site well sealed to the outside to prevent pest and vermin attraction
- Store off the floor by a minimum of 4 inches to allow for cleaning under the pallet and to minimize contamination

- Refrigerate perishable food or discard if refrigeration is not available/feasible
 - Monitor refrigerator/freezer temperature to ensure proper storage (refrigerator, 2–8°C; freezer, ≤ 20°C); Appendix P consists of a monitoring log for refrigerator temperatures
- Plan for temperature degradation due to loss of electricity
- Prepared hot food must be kept at 140°F
- Prepared cold food should be kept at ≤ 45°F
- Leftovers should be dated and used within 4 days or discarded⁴⁰
 - Discard any food that requires refrigeration that has been kept at room temperature for ≥ 2 hours⁴⁰
 - Discard any food that has been kept ≥ 1 hour in a room above 90°F⁴⁰

Proper disinfection of work surfaces and utensils should be performed prior to and after food preparation (see Environmental Decontamination section). Food service workers should perform hand hygiene before and after working with food or contaminated food service areas (see Hand Hygiene section).

Waste Management

Regular Trash

Adequate trash and recycling receptacles should be available and emptied regularly to ensure they do not become overfilled. Ensure regulated medical waste (i.e., biomedical waste/body fluids and/or used needles and sharps) is not mingled with regular trash. The holding area for disposal of waste materials should be safe, clean, and free of access by vermin and insects. After trash and recycling items are picked up for disposal, the holding area should be cleaned and disinfected to remove accumulated organic material; this will prevent infestation by insects, animals, and vermin.

During a disaster, increased amounts of trash and regulated medical waste will be generated and can produce potential hazards. Routine waste management services may not be sufficient for the increased volume of waste generated and/or the facility vendor may not be able to provide service to the ACC during a disaster; ACCs must have a plan for waste containment and storage.

Regulated Medical Waste

ACCs should prepare for the presence of regulated medical waste (RMW). OSHA's definition of RMW is as follows:

Liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semiliquid state if compressed; items that are caked with dried blood or other potentially infectious

*materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.*¹⁰

Most PPE (gowns, gloves, respirators/masks) and dressings will not be considered RMW unless dripping or caked with blood. RMW should be placed in red bags or containers if available, or the bag/container should be labeled as RMW according to state regulations. A biohazard sticker/label can be used if available.

Appendix Q provides a table of proper disposal for various types of waste, including RMW. All ACCs should follow any federal, state, and local requirements regarding the disposal of RMW. In the case of conflicting requirements, the more stringent regulation should be followed. Many local jurisdictions have standing arrangements for appropriate trash management during disasters, including handling RMW. A multidisciplinary approach should be taken to ensure that ACC planners coordinate with local emergency management and public health agencies. In the event that a community emergency management plan does not have such provisions, the following emergency disposal/treatment alternatives should be considered:

- RMW should remain at the ACC
 - Store RMW in an enclosed area (a dirty utility room/area) until arrangements for pickup can be made
- If the ACC's supply of sharps containers becomes depleted, sharps may be placed

in a rigid plastic container, such as a 2-liter soda bottle, and treated by adding a simple bleach solution to render them noninfectious before disposal as regular solid waste (following consultation with state and local regulators)

if they anticipate a splash or spray into the eyes during waste disposal and/or cleaning of human waste collection devices. The dirty utility area should have adequate space to ensure sufficient separation between each component of the disposal and cleaning process, so as to minimize cross-contamination between dirty and clean functions.

Human Waste

Every effort should be made to dispose of human waste products directly into the sanitary sewer system. However, incontinent patients and those with health conditions that preclude their ability to individually access facilities for personal waste elimination will require assistance. Such patients should be provided the necessary supplies and assistance for waste elimination, including appropriate collection devices, skin cleaning, and hand hygiene.

Facility design may require that human waste be collected and transported to a separate/dirty utility area, such as when toilets or hoppers are not available in patient rooms/areas. If human waste is to be collected and transported, care must be taken not to spill the contents. Human waste collection devices, such as urinals and bedpans, must be cleaned and disinfected between uses and should not be shared between patients. At a minimum, a gown and gloves should be worn when transporting human waste to a dirty utility area; staff should consider donning eye protection

If sewage system disruption is a possibility, the ACC manager should assign someone to assess its function immediately. This is most likely to occur following a natural disaster, such as an earthquake or flood, but can occur after any event. If sewage lines break, ACC staff, patients, and visitors should be notified immediately that toilets must not be flushed, as this will result in a flood of heavily contaminated water. If any part of the ACC is flooded with potentially contaminated water/fluid, immediate steps must be implemented to prevent infection spread. This may consist of extensive environmental decontamination and/or closure of the affected area (see the Environmental Decontamination and Physical Plant sections and Appendix R). If the sewage system is damaged/impaired, or the facility lacks water supply, ACC managers should consider the use of disposable devices or local waste management companies for rental of human waste collection systems (i.e., portable toilets).⁴¹ Disposable devices can consist of small buckets/containers or small bags for single use. Trenches are not considered acceptable means of human waste disposal.

Patient Decontamination

Patient decontamination is the process of physically removing chemical, physical, or biological contamination from a person's body. This process is not needed in most disasters and is usually not an infection prevention issue. This document only addresses infection prevention issues related to patient decontamination. Patient decontamination is only an infection prevention issue when the disaster involves the release of a biological agent (e.g., bioterrorism or contaminated liquid agent in a flood). Furthermore, patient decontamination is not needed after all bioterrorism attacks; it is only necessary after an announced attack. Patient decontamination will not likely be needed after an unannounced bioterrorism attack because, by the time the incident is recognized—days to weeks later—patients will have decontaminated themselves by showering and changing their clothes.

The purpose of patient decontamination in relation to infection prevention is twofold: to protect individuals from exposure to the biological agent and to protect the facility from becoming contaminated with infectious particles. If a contaminated patient or item breaches the ACC, it may be necessary to evacuate the

ACC or contaminated area temporarily until environmental decontamination can occur (see the Environmental Decontamination and Physical Plant sections).

Patient decontamination should ideally occur near the incident site, but this may not always be feasible. In rare events, the ACC staff may need to decontaminate a small number of individuals who arrive at the facility with biological contamination on their skin and/or clothing. Performing patient decontamination at an ACC is not likely for multiple reasons. In most communities, patient decontamination sites should be pre-established in the community emergency management plan and these sites are not likely to be an ACC. In addition, ACC staff will not be trained in patient decontamination procedures and thus are not the appropriate professionals to perform this function. Individuals who arrive at the ACC requiring decontamination should be referred to community patient decontamination sites as dictated by the community emergency management plan. Procedures for decontaminating individuals will not be covered in this document; other documents address these procedures and should be used as the basis for developing ACC patient decontamination protocols.^{42–44}

Physical Plant/Facility Needs Related to Infection Prevention

ACCs that will remain open during disasters and/or those that will expand their original scope of practice to accommodate community needs during an event will have unique physical plant needs that must be addressed in order to provide care in a safe environment. A list of infection prevention physical plant issues is included in Appendix S.

It is vital that ACC managers/planners examine the building/space relative to infection prevention issues and implement strategies to decrease the risk of infection spread on-site. This is especially important if the ACC expands its practice or facility during a disaster to accommodate patient surge. Physical plant considerations should include an assessment of entrance and exit points to properly facilitate the flow of personnel, patients, medical equipment, and waste within the facility. This should be done by the IP/IP designee in conjunction with the facility emergency manager, facility/healthcare engineering personnel, safety officer, and executive staff.

During a disaster, the physical structure of the ACC may be damaged and need to be repaired or closed in whole or in part. If the physical damage can affect infection transmission, such as a flood or a sewage line break, the IP/IP designee will need to implement environmental controls, including the potential temporary closure of any

area within the boundaries or grounds of the ACC until environmental decontamination can occur. Appendix R outlines risk assessment and infection prevention strategies for environmental decontamination following a flood. Temporary evacuation of the ACC may be necessary if the contamination is extensive. Mold can be brought into the ACC via contaminated objects or it can grow within the ACC if the physical structure becomes wet. The ACC should be monitored for mold growth because it can contribute to excess morbidity and mortality. Care should be taken to recognize and monitor any areas with moisture due to flooding or leaks. Mold growth within an ACC may require temporary closure, in whole or in part, until environmental decontamination can occur.

If the disaster involves a communicable disease, such as an infectious disease disaster, it is vital that an ACC have designated room(s)/area(s) that can be used or converted to isolation room(s)/space(s) (see the Isolation section). ACCs should also use social distancing strategies when designing waiting rooms/areas and triage/screening areas to prevent the spread of disease.⁴⁵ Whenever feasible, an ACC should attempt to create AIIRs or a negative pressure room/area on-site in case airborne isolation is required. Guidelines for developing/setting up AIIRs and/or negative airflow protective environments have been published and should be used by ACC managers.^{14,15}

Environmental Decontamination

Contamination of the environment can contribute to infectious disease spread within the ACC. The patient care environment has been associated with infection transmission in healthcare settings. Medical equipment and items used in invasive procedures pose the greatest risk for disease transmission. However, frequently touched items, such as tables, doorknobs, utensils, and toys, also pose a risk. The more contaminated the environment, the greater probability that disease transmission to patients and staff may occur. This is especially true during a pandemic or outbreak of an infectious disease when infected individuals shed infectious particles that contaminate the environment and pose a risk to other individuals and workers at the ACC.

Guidelines on proper cleaning and disinfection for healthcare facilities are available through existing documents and should already be in place for routine ACC activities.³⁵ Environmental decontamination protocols specific to disasters must also be developed, such as facility cleaning during a smallpox outbreak. Environmental decontamination protocols should be based on recommendations that are specific to the disease/event. ACC workers should be provided appropriate PPE for environmental decontamination (see the PPE section). If the ACC uses a contracted environmental service agency, the ACC emergency management plan should include contingencies for obtaining environmental services from an alternative vendor in the event of a disaster in which the contracted vendor cannot provide service.

Selection of Cleaning/Disinfecting Agents

The disinfection agent used to clean an ACC should be an Environmental Protection Agency (EPA)-registered chemical disinfectant.²⁴

- In most cases, an EPA-registered quaternary ammonium compound is adequate for cleaning environmental surfaces³⁵
- During outbreaks of certain infectious organisms, such as norovirus, *C. difficile*, VRE, or other agents that are spread by direct or indirect contact, the ACC should consider substituting a bleach solution or other appropriate EPA-registered disinfectant that is specific to the agent involved in the event^{35,46}

Disinfectant products can be purchased undiluted, diluted in pour/spray bottles, or in premoistened towelettes. The form of the disinfectant product is less important than the dilution and contact time when the product is used. Manufacturers' recommendations should always be followed to ensure proper disinfection of the environment.⁴⁶

If an EPA-registered disinfectant product is unavailable, a bleach solution can be created by mixing 1 teaspoon unscented household chlorine bleach (sodium hypochlorite) per quart of clean water (metric conversion: 5 mL bleach per liter of clean water). EPA-registered chemical germicides are preferred over bleach solutions because they are less corrosive to environmental surfaces and there are less offensive fumes associated with their use.

If EPA-registered disinfectant and/or bleach solution supplies are unavailable, commercially available cleaners may be substituted.

Cleaning and Disinfection Supplies

Cleaning and disinfection supplies can contribute to infection spread in healthcare environments if they become contaminated or are used inappropriately.³⁵ Therefore, steps must be taken to prevent contamination of cleaning supplies in ACCs. The following recommendations should be used to prevent cross-contamination of cleaning supplies:

- Single- or multiple-use containers of cleaning solution may be used
 - Multiple-use containers of cleaning solution should be mixed fresh daily or as needed by the ACC
 - If a multiple-use container is used, the container must be cleaned and dried between mixing batches of cleaning solution
 - Small amounts of disinfectant/cleaning solution should be poured from the multiple-use container into buckets or small containers for individual use, making sure to keep the chemical disinfectant at the correct dilution
 - Disinfectant/cleaning solution must be appropriately labeled if it is repackaged into new/smaller containers
 - Dirty mop heads and cleaning cloths should never be put into the multiple-use container of cleaning solution as this can cause cross-contamination
 - Single-use cleaning solution containers should be discarded after each use
- Mopping solution should be changed after every three rooms or at least every 60 minutes⁴⁶
 - If the ACC does not have traditional rooms (i.e., surgical bays or other open areas) or expands into areas not originally designed for patient care (i.e., hallways, administrative offices, etc.), a three-patient space/area should be approximated when determining how often to change mopping solution
- Mop buckets should be cleaned and allowed to air dry at the end of each day
- Mop heads should be replaced at least once daily or more frequently if needed because of high contamination in the ACC or after cleaning up a blood or body fluid spill³⁵
 - Mop heads should be replaced after cleaning the floor of an isolation room/area⁴⁶
 - A new mop head should be used to clean the floor of an ACC surgical area after each surgical procedure⁴⁷
- Disposable mop heads and cleaning rags/cloths are single-use items that should be discarded after use
- Cleaning cloths should be used to work from cleaner to dirtier areas
 - A new cleaning cloth should be used after cleaning up a blood or body fluid spill, a highly dirty/contaminated area/item, and/or an isolation room/area³⁵
 - The same cleaning cloth should not be used for bathrooms and patient care areas unless laundered between uses
- Reusable mop heads and cleaning cloths should be cleaned/launched and dried at 176°F for 2 hours between uses⁴⁶

Cleaning Body Fluid Spills

All body fluid spills should be cleaned up immediately. If a spill contains blood or body fluids, the following procedure should be followed¹⁶:

- Put on gloves
- Cover the spill with an absorbent material
- If glass or sharp objects are present in the spill, the material should be picked up using mechanical means (i.e., a brush and dust pan, tongs, forceps, etc.) and placed in an appropriate container
- Apply an EPA-registered disinfectant in the correct dilution and allow it to sit for the time required by the manufacturer's recommendations
- Cover the spill with additional absorbent material
- Dispose of all materials in appropriate waste container (see Appendix Q)
- Clean the area with cloth or paper towels moderately wetted with an EPA-registered disinfectant
- Allow surfaces to air dry

Cleaning Environmental Surfaces

EPA-registered disinfectants should be used in accordance with manufacturer's recommendations in regard to dilution and contact time when cleaning environmental surfaces.³⁵ Daily cleaning of a patient room/area should include disinfection of all horizontal surfaces, allowing for adequate contact/dwell time (i.e., the amount of time the product remains wet on the surface) according to the manufacturer's recommendations for the disinfectant being used. Environmental cleaning should focus on surfaces that are frequently touched by hands, such as bed rails, bedside tables, etc. Additional cleaning may need to be performed if the environment becomes contaminated, such as a body fluid splash or

spray to a wall or curtains. During outbreaks of agents spread by direct or indirect contact, more extensive cleaning may be required to stop the outbreak.^{5,48} Cleaning/disinfection and inspection of a previously closed area of the ACC should be performed before reopening the area.⁴¹

Whenever possible, clean carpeted floors, upholstered furniture, or other cloth items with a vacuum cleaner equipped with a HEPA filter. Disinfection of the vacuum cleaner is not required when a HEPA filter is installed properly and remains intact during use. Commercially available products may be used to remove visible soil or stains from carpets and upholstery. Sweeping and dry mopping of carpets and upholstery should be avoided.

Cleaning frequency should occur as follows:

- Bathroom areas should be cleaned daily and as necessary
- Food preparation areas should be cleaned after each meal and as needed between food preparation tasks
- Patient rooms/areas, isolation rooms/ areas, and medical or triage areas should be cleaned between every patient and as necessary
- Reusable medical equipment should be cleaned/disinfected in between uses

Cleaning Beds/Stretchers/Cots/Mattresses

Patient beds/stretchers/cots should be cleaned daily as part of routine environmental decontamination with a special emphasis on cleaning of bed rails, when present. Beds/stretchers/cots, or mattresses of incontinent patients or those with a draining wound should be covered with an impermeable barrier (waterproof mat/sheet, absorbent pad, blue pad, plastic, etc.) to prevent them from becoming contaminated. If impermeable barriers are not used and beds/stretchers/cots/mattresses become contaminated,

they should be cleaned/disinfected. Disinfection procedures depend on the bed/stretchers/cot/mattress material:

- Plastic materials should be disinfected using the procedure for cleaning body fluid spills
- Non-cloth mattress covers should be cleaned/disinfected between patients using an EPA-registered disinfectant³⁵
- Beds, stretchers, or cots made of cloth/canvas materials should be cleaned by scrubbing with soap and water or disinfectant
 - Grossly contaminated beds/stretchers/cots/mattresses may need to be discarded, if resources allow (see Appendix Q)

Linens/Laundry Management

ACCs may require laundry/linens for patient care for routine practice and during disasters. Linens can transmit infections in healthcare settings unless they are handled carefully. ACCs that outsource linen management should include a backup plan for obtaining linen management services during a disaster. Linen usage is likely to increase during a disaster and the vendor used for routine service may not be able to meet the facility's needs during an event; the ACC emergency management plan should identify alternative solutions if this occurs.

Standard Precautions should be used to handle all linens, including those from potentially contagious patients.² Safe handling of healthcare linens includes:

- Appropriate PPE should be worn when handling used patient linens^{4,35}
- Laundry workers should perform frequent hand hygiene³⁵
- Package, transport, and store clean linens in a way that protects them from dust/dirt³⁵

- Sterile linens must be used for sterile procedures, such as surgery
- Bed/cot bedding should be cleaned and laundered between occupants and as needed when contaminated with body fluids
- Cloth mattress covers should be laundered between patients³⁵
- Pillow covers and washable pillows should be laundered between patients or when contaminated with blood or body fluids using a hot water wash cycle³⁵
- If routine laundering of linens is not available or feasible during a disaster, ACCs should consider using disposable linens or extending the time between washing of linens
 - Priority should be given to washing linens that are contaminated with blood or body fluids
- Minimize linen agitation to prevent reaerosolization of infectious particles³⁵
 - Consider utilizing water-soluble or reusable laundry bags that can be washed with the linens⁴
- Bag linens/laundry at the point of use³⁵
- Use a leak-resistant container/system for linens that are contaminated with blood or body fluids³⁵
- Have a separate dirty and clean laundry area³⁵
 - Dirty laundry area should be negative pressure compared to clean laundry area³⁵

Additional infection prevention interventions may be needed for certain infectious agents, such as *Variola* (i.e., smallpox). Disease-specific guidelines should be consulted during infectious disease disasters.⁵

Washing Healthcare Linens

The following guidelines should be used when washing linens from healthcare settings, including ACCs.

- If hot water washing is used: Wash with detergent in water that is $\geq 160^{\circ}\text{F}$ for ≥ 25 minutes³⁵
- If cold water ($< 160^{\circ}\text{F}$) washing is used: Choose chemicals suitable for low-temperature washing and use at concentrations designated by the manufacturer³⁵

Cleaning, Disinfecting, and Sterilizing Medical Equipment

Medical equipment and surgical instruments can lead to HAI transmission if proper infection prevention procedures are not followed. Single-use items are considered disposable and should not be reused between patients. If disposable equipment is not available and/or feasible for the task being performed, the item must be reprocessed between uses. Medical equipment and surgical instruments are classified into categories based on risk of infection transmission.⁴⁹ The categories include noncritical, semicritical, and critical. Noncritical items consist of equipment/items that only have contact with intact skin and therefore pose a very minor risk of infection transmission. Semicritical equipment/items include those that come in contact with mucous membranes and nonintact skin. Critical equipment/items are those that enter into sterile body sites or the vascular system.

Consult the manufacturers' recommendations for cleaning, disinfecting, and sterilizing of medical equipment and surgical instruments if possible. These instructions should include information about a) the equipment's risk of infection transmission, b) the equipment's compatibility with chemical germicides, c) whether the equipment is water-resistant or can

be safely immersed for cleaning, and d) how the equipment should be decontaminated if servicing is required.⁴⁹ In the absence of manufacturer's instructions, noncritical medical equipment usually only requires cleansing followed by low- to intermediate-level disinfection, depending on the nature and degree of contamination (see Appendix T). Semicritical items require high-level disinfection. Critical items require sterilization between uses. Procedures and chemical disinfectant/sterilants for performing low, intermediate, and high level disinfection and sterilization are outlined in Appendix T.

The ACC may reprocess medical equipment and surgical instruments on-site if proper equipment and procedures are used. If resources do not allow this, reprocessing of equipment may be outsourced to a vendor or local hospital. Plans and protocols for these procedures should be part of the ACC emergency management plan to facilitate fast response during an event. If sterilization of reusable critical equipment/instruments cannot be performed on-site or outsourced due to limited resources, crisis standards of care should outline when the ACC should consider high-level disinfection to temporarily replace sterilization for reusable equipment.⁴¹

Medical equipment surfaces that may become contaminated with blood or body fluids, or those that are difficult to disinfect may require the use of physical barriers. Impervious-backed paper, aluminum foil, and plastic or fluid-resistant covers can be used as barrier protection. Coverings should be removed and discarded after each use and done so while the worker is still wearing gloves. A new barrier must be used for each patient encounter.³⁵

Dialysis

During disasters, individuals with chronic kidney disease will have a continued need for regular dialysis treatment. The Kidney Community Emergency Response Coalition and other organizations have developed networks to ensure that dialysis care can still be provided during disasters.⁵⁰ In addition, the Centers for Medicare & Medicaid Services (CMS) indicate that dialysis centers should have emergency management plans that address how dialysis services will be provided during disasters.⁵¹ Existing ambulatory dialysis centers may be called upon to continue to dialyze patients during a disaster. If this is not feasible due to limited resources or physical damage to the ACC, patients requiring dialysis should be referred to a hospital, alternate care site, or other dialysis center to receive care.

The risk of dialysis-related infections will likely be higher during disasters if resources become limited and crisis standards of care are implemented. Because of this, attention to infection prevention will be critical for any ACC that provides dialysis services. Guidelines for dialysis centers have been published by the National Kidney Foundation Kidney Dialysis Quality Outcome Initiative and are a necessary resource for infection prevention planning for an ACC.⁵² Guidelines on preventing infection transmission during dialysis are also provided by APIC.⁵³ In addition, water purity standards have been established by the Association for the Advancement of Medical Instrumentation (AAMI)⁵⁴ and the CDC⁵⁵ and should be followed when designing a water system for dialysis treatment.

Surgery

ACCs may need to provide surgical services following a disaster, depending on community needs and the scope of practice for the facility. Surgery poses a risk of infection transmission, even in the best of circumstances. The risk of surgical site infections will likely be higher during disasters if resources become limited and crisis standards of care are implemented. Because of this, attention to infection prevention will be critical for any ACC that provides surgical services.

There are many organizations that have developed surgical site infection prevention guidelines for perioperative services, including the CDC,⁵⁵ AAMI,⁵⁶ Association of Perioperative Registered Nurses (AORN),⁴⁷ and the Surgical Care Improvement Project. ACCs that will provide surgical services should consult these guidelines and implement practices outlined by these organizations for routine practice and during disasters.

Miscellaneous Medical Procedures

ACCs will likely need to perform a number of invasive medical procedures to care for high acuity patients during disasters. Examples of invasive medical procedures include giving injections; suturing wounds; debridement; and insertion and maintenance of central venous catheters, urinary catheters, endotracheal tubes, chest tubes, nasogastric tubes, and other medical devices that are inserted into the body. Invasive medical procedures can range from those that have a low risk of infection transmission, such as giving an injection, to those with a high risk of infection, such as inserting an endotracheal tube and putting the patient on a mechanical ventilator. The risk of HAIs is higher in patients requiring these interventions due to the patient's increased severity of illness necessitating the procedure

and providing a portal of entry into the body for pathogens. Aseptic technique should be used when performing any invasive medical procedure unless the procedure requires more stringent infection prevention strategies. Adherence to infection prevention techniques specific to each medical procedure is critical. The Institute for Healthcare Improvement and APIC have developed guidelines for decreasing the risk of HAIs related to the use of central venous catheters⁵⁷ and urinary catheters,^{58,59} among other medical devices. These guidelines should be included when developing the infection prevention plan for the ACC. Summaries of infection prevention strategies related to central line–associated bloodstream infections and catheter-related urinary tract infections are outlined in Appendices U and V.

Toys

In ACCs where services for pediatric patients are provided, it is highly likely that toys will be present, shared, and exchanged. This may occur whether or not the parents bring in toys with any particular child or if the ACC provides toys in single-use bags to give to children so that toys are not shared (i.e., noncommunal toys). It will definitely occur if the ACC has chosen in advance to provide toys for shared use (communal toys).

Although toys are an important tool for distraction, entertainment, and development, they have the potential to spread disease.² If the ACC is planning to provide services for pediatric patients, the ACC manager needs to decide if the facility will provide communal toys. If the facility is to provide communal toys, the play area should consist of a designated area/space (whenever possible) within the “well” side of the triage/waiting room (see the Triage Area section). Sick/symptomatic children should not visit the “well” play area. The ACC should work with facility-associated leadership (if part of a hospital network) or local media to communicate to parents/guardians that children’s personal toy(s) should be brought to the ACC if the child is sick/symptomatic.^{2,60} Staff, children, and parents/guardians should perform hand hygiene before entering and when leaving any designated play area.² Whether or not a play area is provided, hand hygiene products should be readily available at a designated location in waiting areas.²

The following recommendations are designed to reduce the risk of disease transmission related to toys in an ACC.

Toy Selection

During infectious disease disasters (e.g., bioterrorism, outbreak of an emerging infectious disease, or pandemic) and outbreaks that occur after other types of disasters, the ACC should consider eliminating communal toys. If the ACC will provide communal toys, a written and readily accessible procedure for the storing, monitoring, and cleaning of toys should be developed. ACC staff/volunteers who will be assigned to monitor toys in the ACC need to be trained on these procedures. When procuring toys in advance, administrative leadership of the ACC should:

- Give preference to obtaining toys with nonporous surfaces that are less likely to become contaminated and can be easily cleaned, disinfected, and dried⁶⁰
- Avoid crib mobiles, soft/stuffed toys, handheld electronic games, and wooden and blow toys because they are difficult to clean, disinfect, and dry
- Accept only soft/stuffed toys and cloth dolls from donors if they are new or have been cleaned and disinfected prior to delivery
- Avoid bath or other toys that retain water because they can harbor germs²

Handling and Cleaning Communal Toys

The ability to maintain communal toys safely in an ACC requires staff assigned to monitor any common play area or waiting room to implement cleaning and disinfecting procedures for those toys. The sharing of handheld electronic games and wooden toys should be discouraged as they

are difficult to clean. Soft/stuffed toys and/or cloth dolls should not be shared between children.²

Communal/shared toys should be handled using the following recommendations:

- Two toy boxes should be made and labeled appropriately: one box for clean toys and one for dirty toys that need to be cleaned
- If toy boxes are not available, a clean and dirty area for toys should be designated within the ACC to segregate clean from dirty toys whenever feasible
- After use, toys should be placed in the dirty toy box or segregated area
- All toys in the dirty toy box or dirty toy area should be cleaned before next use
- If a toy is broken or unable to be cleaned, it should be discarded
- Routine cleaning of books, crayons, and board games is impractical; any of these items that become visibly soiled should be discarded and any child found having contact with the item via mouth should be given the item; the book/crayon/game should not be shared
- Magazines and other dated reading materials should be replaced at least monthly with new materials, or when visibly soiled
- Language appropriate information sheets and signs dealing with basic hygiene surrounding children and toys should be developed in advance and be visible within the ACC; see Appendix W for an example of an educational poster about toys

Frequency of Toy Cleaning and Disinfecting

- All toys need to be cleaned at least daily and when obviously soiled.
- Toys that are routinely placed in children's mouths, or are otherwise contaminated

with body secretions, should be placed in the dirty toy box or segregated area after use for cleaning before use by another child.²

Procedure for Cleaning Toys of Noninfected/Well-appearing Children

- Small toys may be washed with soap and water and then disinfected using an EPA-registered disinfectant that is nontoxic to children, a 1:100 dilution of household bleach, or a 70% alcohol wipe or towelette and allowed to air dry. Rinsing with water is not necessary when disinfecting with alcohol, but should be performed when using an EPA-registered disinfectant or bleach solution.¹

Toys that will not be damaged by immersion should be cleaned as follows:

- Clean in a dishwasher or the hot cycle of a washing machine
 - Standard dishwasher or washing machine detergents may be used

If a dishwasher or washing machine is not available:

- Hand wash with a soap and water wash using dishwashing soap
 - Scrub the toy in warm, soapy water
 - Use a brush or dishcloth to reach into the crevices and remove soil
 - Rinse with clean water
 - Air dry or dry with a clean cloth

After cleaning is accomplished, toys should be disinfected using the following guidelines:

- Spray or wipe the toy with an EPA-registered disinfectant that is nontoxic to

children or a 1:100 dilution of household bleach,¹ ensuring all surfaces are wet for one minute (bleach solution) or for the time specified by the disinfectant (EPA-registered product)

- Allow toys to air dry
- Toys that are likely to be mouthed by infants and toddlers should be rinsed with clean water after they are disinfected to remove the potential of chemical residue remaining on the toy (and thus be accidentally ingested) and then air dry or dry with a clean cloth¹

For toys that would be damaged by immersion (keyboards, computer mice, handheld electronic games, wind-up toys, etc.)³⁵:

- Wipe with a 70% alcohol wipe/towelette, keeping the surface wet for 5 seconds
- Allow to air dry
 - Note: Alcohol wipes may damage the outside of electronic toys

Procedure for Cleaning Toys of Infected/Isolated or Ill Children

- Children with symptoms of contagious diseases (see the Infection prevention Triage Form, Appendix E) should not be allowed in common play areas¹
- The toy of any child who is visibly ill, or suspected of having an infectious disease, should remain with that child while they are ill

Handling and Cleaning Noncommunal Toys

Noncommunal toys are those that are brought to the ACC by an individual child/family or those that cannot be shared due to the construction of the toy (i.e., fabric).

- Noncommunal toys should be monitored and cleaned by the parent/guardian of the child possessing the toy
- Parents/guardians should discourage the sharing of these types of toys

Pest Management

The ACC must have a plan to manage pests during routine activities and following a disaster. Following a disaster, there will likely be an increase in insects and other pests in or around the facility due to rain and high water levels, such as after a hurricane or flood. Cockroaches, flies, mosquitoes, ants, mice/rats, snakes, and other pests will seek warmth, moisture, and available food. Some pests can spread diseases, such as West Nile or dengue virus via the bite from an infected mosquito; other pests may invade food or medical supplies.

Facilities should minimize and eliminate pests and vermin by implementing environmental controls.⁶¹ Recommendations for pest control include the following⁴⁶:

- Eliminate food sources for pests (see the Food Safety section)
 - All garbage and medical waste should be stored away from the facility in closed containers
- Eliminate areas for nests, burrows, or breeding grounds such as open pipes or boxes
- Evaluate the physical structure of the ACC for potential vermin entrances, such as windows with torn or missing screens, doors left propped open, standing water, etc. and seal/eliminate any potential problem areas
- Work with a community pest control team/company if needed

Rodents, such as rats and mice, can spread disease by contaminating food and the environment or by biting/scratching humans. During disasters, garbage collection may be compromised, resulting

in an increased need for rodent control at the ACC. The following steps should be taken to reduce the risk of having the site become overwhelmed with rats and mice:

- Food and water should be kept covered and stored in a rodent-proof container (i.e., a glass, thick plastic or metal container with a tight-fitting lid)⁶²
- Garbage should be disposed of in a rodent-proof container on a frequent basis in an area removed from the ACC (see Waste Management section)

In the event rodents invade an ACC, spring-loaded traps should be used to catch or kill them. Glue traps are not recommended because they can scare mice and cause them to urinate, contaminating the ACC.⁶² If rodents have entered an ACC, care must be taken when cleaning droppings, urine, or nesting materials so as not to aerosolize germs excreted from the rodents.⁶² Recommendations include the following⁶²:

- The area should not be swept or vacuumed until it has been properly disinfected. Disinfection should take place by spraying the area and the droppings/urine with a solution of 1 part bleach to 10 parts water until the area is moist to prevent dust/reaerosolization of infectious particles.
- The area should be sprayed thoroughly and paper towels should be used to absorb the bleach solution.
- The paper towels should be placed in a sealed container outside the ACC and the area resprayed with a 1:10 bleach solution.

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- Gloves made of latex, vinyl, rubber, or nitrile should be worn when coming in contact with rodent excrement or dead rodents.
- If a rodent is killed after being trapped/ caught, it should be sprayed with a 1:10 bleach solution, then carefully removed from the spring-loaded trap and allowed to drop into a plastic bag.
 - Alternatively, the animal and the trap can be placed in a plastic bag.
- The bag should be sealed and placed in a second plastic bag, which should also be sealed before placing it in a covered garbage container.
- If the trap is to be reused, it should be disinfected with bleach solution and rinsed thoroughly before reuse.
- After cleanup of rodents or rodent contaminated materials, gloves should be removed and hand hygiene should be performed.
- Traps should continue to be set for 1 week after the last rodent is caught.

Animal Management

Given the nature of the ACC, only service animals should be allowed in an ACC. The animal does not have to be licensed or certified by a state or local government as a service animal, but they must meet the definition of a “service animal” according to the 1990 Americans with Disabilities Act (ADA). According to the ADA, a service animal is “*any animal individually trained to do work or perform tasks for the benefit of an individual with a disability, including, but not limited to, guiding individuals with impaired vision, alerting individuals who are hearing impaired to intruders or sounds, providing minimal protection or rescue work, pulling a wheelchair or fetching dropped items*” (pg. 1).⁶³

The ACC manager should coordinate with local community emergency management agencies to know the location of emergency kennels/shelters for pets. This information should be made available to the screener and/or at the triage/screening area (i.e., at the facility entrance) in case a patient or visitor arrives with a pet that is not a service animal.

The ACC needs to have supplies available to clean up any potential urine or fecal elimination from the service animal within the ACC. When cleaning up animal elimination within the ACC, gloves should be worn and hand hygiene should be performed after the gloves are removed.⁶⁴

Postmortem Care

Following a disaster, local and state authorities should be prepared for the possibility of deaths over and above the number of fatalities from all causes typically expected during that period. To prepare for the possibility of mass fatalities, healthcare facilities must plan for processing of the deceased. ACCs should work with the local health department and local coroner to ensure they have access to additional supplies and can expedite the steps, including the completion of required documentation, necessary for efficient management of the deceased during a disaster. The National Association of Medical Examiners (NAME) has developed a guide for mass fatality plans⁶⁵ and recommendations for handling contaminated deceased bodies.⁶⁶

ACCs should consider the following when developing an infection prevention plan related to patient death:

- Assess current capacity for a temporary morgue and/or refrigeration of deceased persons
 - Discuss possible storage plans in the event that refrigeration is not feasible
- Discuss local and state emergency management plans with public health officials and medical examiners related to patient death
- Determine the scope and volume of supplies (e.g., body bags) needed to handle an increased number of deceased persons

Procedures for handling of the deceased are dictated by local and state regulations.⁶⁷ Most

infectious agents/diseases do not survive long in a dead body; exceptions to this include smallpox and tuberculosis.^{68–70} In addition, victims of a bioterrorism attack can have a residual infectious agent on their body that could pose a risk to medical examiners or coroners during autopsy procedures.⁷¹ The following precautions should be taken during postmortem care:

- Observe Standard Precautions for all contact with the body⁶⁷
- Remove all invasive medical devices according to local and state regulations unless the body is scheduled for autopsy⁶⁷
- Pack and bandage wounds and natural openings with absorbent material to decrease possibility of exposure to body fluids⁶⁷
- Consult state health codes for morgue refrigerator temperatures and body bag requirements for transport⁶⁷
- Consider limiting contact with the body to close family members and ensure Standard Precautions and hand hygiene are observed if the deceased had a communicable disease that is known or suspected of being able to be spread from a dead body to others⁷²

Autopsies pose a high risk for infection transmission and should not be performed in ACCs unless the ACC meets the NAME requirements for being an autopsy room, the ACC has biosafety policies in place that specifically address performing autopsies, and staff are trained on infection prevention autopsy precautions.⁷¹

Infection Prevention Education/Training

Infection prevention education is essential for ACC staff, patients, and visitors. There are a variety of ACC worker groups who need infection prevention training; these groups are outlined in Appendix X. Infection prevention competencies have been developed for hospital-based healthcare workers, but do not currently exist for ACC staff.⁷³ However, these competencies can be used for education development for ACC healthcare workers and may serve as a starting point for creating training for other groups.

Infection prevention education/training topics needed for ACC staff, patients, and visitors are outlined in Appendix Y. This training includes general infection practices that apply to all disasters, such as how and when to perform hand hygiene and respiratory etiquette, isolation precautions, PPE use, how to safely reuse respiratory protection, and screening procedures. In addition, event- or disease-specific infection prevention information will need to be communicated/taught to ACC staff, patients, and visitors. This will include information such as specific isolation and PPE recommendations for a novel strain of influenza during an influenza pandemic or other disease-specific guidelines.

It is vital to use signage that identifies isolation recommendations, including appropriate PPE needed.

It would be best if ACC personnel are provided pre-event training on basic infection prevention practices and that these procedures are implemented in routine activities. Infection prevention education should be incorporated into new staff orientation and continuing education programs. Routine infection prevention training will benefit the organization by improving patient and healthcare worker safety and will facilitate response to an infectious disease disaster. Pre-event/routine infection prevention training will also decrease the amount of just-in-time (JIT) infection prevention training that would need to be done during a disaster. Regardless of ACC workers' baseline knowledge of infection, JIT training should be offered during a disaster; this education should include description of event/disease-specific information. Whenever possible, the IP/IP designee should keep JIT training materials on hand to distribute during disasters.⁷⁴ Signage, such as Appendices H, I, L, M, Q, and W, can also assist in JIT training.

References

1. Pickering LK, Baker CJ, Kimberlin DW, Long SS, eds. Infection control and prevention in ambulatory settings. In: *Red Book: 2009*. Elk Grove Village, IL: American Academy of Pediatrics, 2009.
2. Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee. *Guideline for isolation precautions: Preventing transmission of infectious agents in healthcare settings 2007*. Available at: <http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html>. Accessed July 3, 2007.
3. Rebmann T, Russel J, Alexander S, Cloughessy M, Coll B, Hilley S, et al. *Infection prevention in alternate care sites*. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2009.
4. Rebmann T. Infectious disease disasters: Bioterrorism, emerging infections, and pandemics. In: Carrico R, ed. *APIC Text of Infection Control and Epidemiology, 3rd ed*. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2009; Chapter 118.
5. Association for Professionals in Infection Control and Epidemiology (APIC). *2002 interim bioterrorism readiness planning suggestions*. Association for Professionals in Infection Control and Epidemiology (APIC) Web site. 2002. Available at: http://www.apic.org/Resource_/TinyMceFileManager/Practice_Guidance/Emergency_Preparedness/Role_of_IP_in_Emergency_Management.pdf. Accessed April 7, 2002.
6. Sebazco S. Occupational health. In: Carrico R, ed. *APIC Text of Infection Control and Epidemiology, 3rd ed*. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2009; Chapter 26.
7. U.S. Department of Health and Human Services. *Guidance on antiviral drug use during an influenza pandemic*. U.S. Department of Health and Human Services Web site. 2009. Washington, DC: HHS. Available at: http://www.pandemicflu.gov/individualfamily/vaccination/antiviral_use.pdf. Accessed September 9, 2009.
8. Syrett JL, Benitez JG, Livingston WH, William H, Davis EA. Will emergency health care providers respond to mass casualty incidents? *J Healthc Prot Manage* 2007;23(2):27-40.
9. McDonald LC, Simon AE, Su IJ, Maloney S, Ofner M, Chen K, et al. SARS in healthcare facilities, Toronto and Taiwan. *Emerg Infect Dis* 2004;10(5):777-781.
10. Occupational Safety and Health Administration (OSHA). *Bloodborne pathogens*. Standard 1910.1030. Occupational Safety and Health Administration Web site. 1991. Available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051. Accessed October 3, 2007.
11. Rebmann T, Coll WE. Infection prevention in points of dispensing (POD). *Am J Infect Control* 2009;37(9):695-702.
12. Centers for Disease Control and Prevention. Transmission of hepatitis B and C viruses in outpatient settings – New York, Oklahoma, and Nebraska, 2000-2002. *MMWR Morb Mortal Wkly Rep* 2003;52(38):901-906.
13. Centers for Disease Control and Prevention. Acute hepatitis C virus infections attributed to unsafe injection practices at an endoscopy clinic – Nevada, 2007. *MMWR Morb Mortal Wkly Rep* 2008; 57(19):513-517.
14. Minnesota Department of Health. *Airborne infectious disease management manual: Methods for temporary negative pressure isolation*. Minnesota

- Department of Health Web site. 2007. Available at: <http://www.health.state.mn.us/oep/training/bhpp/airbornenegative.pdf>. Accessed May 30, 2013.
15. Rebmann T. Management of individuals infected with airborne-spread diseases: An algorithm for infection control professionals. *Am J Infect Control* 2005;33:571-579.
16. Centers for Disease Control and Prevention. *Interim guidance on planning for the use of surgical masks and respirators in health care settings during an influenza pandemic*. Centers for Disease Control and Prevention Web site. 2006. Available at: <http://www.pandemicflu.gov/plan/healthcare/maskguidancehc.html>. Accessed November 11, 2007.
17. Centers for Disease Control and Prevention. *Eye protection for infection control*. Centers for Disease Control and Prevention Web site. 2004. Available at: <http://www.cdc.gov/niosh/topics/eye/eye-infectious.html>. Accessed September 23, 2009.
18. U.S. Food and Drug Administration. *Respirators for public health emergencies*. U.S. Food and Drug Administration Web site. 2007. Available at: <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm049295.htm>. Accessed June 12, 2007.
19. Occupational Safety and Health Administration. *Respiratory protection standard*. Standard 1910.134. Occupational Safety and Health Administration Web site. 2008. Available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=12716. Accessed September 13, 2009.
20. Centers for Disease Control and Prevention. *Questions and answers regarding respiratory protection for infection control measures for 2009 H1N1 influenza among healthcare personnel*. Centers for Disease Control and Prevention Web site. 2009. Available at: http://www.cdc.gov/h1n1flu/guidance/ill-hcp_qa.htm. Accessed October 20, 2009.
21. Centers for Disease Control and Prevention. *Interim guidance on infection control measures for 2009 H1N1 influenza in healthcare settings, including protection of healthcare personnel*. Centers for Disease Control and Prevention Web site. 2009. Available at: http://www.cdc.gov/h1n1flu/guidelines_infection_control.htm. Accessed October 20, 2009.
22. Rebmann T, Boeker S, Hilley S, Olmsted RN, Dolan SA, Bartley J, et al. *Extending the use and/or reusing respiratory protection in healthcare settings during disasters*. Association for Professionals in Infection Control and Epidemiology Web site. 2009. Available at: http://www.apic.org/Resource_/TinyMceFileManager/Position_Statements/APIIC_Position_Ext_the_Use_and_or_Reus_Resp_Prot_in_Hlthcare_Settings1209l.pdf. Accessed August 6, 2012.
23. Committee on the Development of Reusable Facemasks for Use During an Influenza Pandemic. *Reusability of Facemasks during an Influenza Pandemic: Facing the Flu*. Washington, DC: National Academies Press, 2006.
24. Occupational Safety and Health Administration. *Pandemic influenza preparedness and response guidance for healthcare workers and healthcare employers*. Occupational Safety and Health Administration Web site. 2007. Available at: http://www.osha.gov/Publications/OSHA_pandemic_health.pdf. Accessed March 14, 2008.
25. Occupational Safety and Health Administration. *OSHA statement re: H1N1-related inspections*. Occupational Safety and Health Administration Web site. 2009. Available at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=NEWS_RELEASES&p_id=16602. Accessed October 20, 2009.
26. World Health Organization. *Avian influenza, including Influenza A (H5N1), in humans: WHO interim infection control guideline for health care facilities*. State of Utah Web site. 2007. Available at: <http://pandemicflu.utah.gov/docs/HCIInfectionControlAlinhumansWHOInterimGuidelinesfor.pdf>. Accessed October 20, 2009.
27. World Health Organization. *Infection prevention and control of epidemic and pandemic-prone acute respiratory diseases in health care*. World Health Organization Web site. 2007. Available at: http://www.who.int/csr/resources/publications/WHO_CD_EPR_2007_6/en/index.html. Accessed September 22, 2009.
28. Cal/OSHA. *Cal/OSHA interim enforcement policy on H1N1 and Section 5199 (aerosol transmissible diseases)*. Cal/OSHA Web site. 2009. Available at: http://www.dir.ca.gov/dosh/SwineFlu/Interim_enforcement_H1N1.pdf. Accessed October 20, 2009.

Infection Prevention for Ambulatory Care Centers During Disasters

29. Centers for Disease Control and Prevention. *Severe acute respiratory syndrome. Supplement I: Infection control in healthcare, home, and community settings*. Centers for Disease Control and Prevention Web site. 2004. Available at: <http://www.cdc.gov/sars/guidance/I-infection/index.html>. Accessed November 12, 2005.
30. U.S. Food and Drug Administration. *Masks and N95 respirators*. U.S. Food and Drug Administration Web site. 2009. Available at: <http://www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/GeneralHospitalDevicesandSupplies/PersonalProtectiveEquipment/ucm055977.htm>. Accessed October 25, 2009.
31. Dato VM, Hostle D, Hahn ME. Simple respiratory mask. *Emerg Infect Dis* 2007;12(6):1033-1034.
32. World Health Organization. *Advice for people living in areas affected by bird flu or avian influenza*. World Health Organization Web site. 2004. Available at: http://www.who.int/influenza/resources/documents/advice_people_area/en/index.html. Accessed November 27, 2007.
33. Centers for Disease Control and Prevention. *Interim public health guidance for the use of facemasks and respirators in non-occupational community settings during an influenza pandemic*. Centers for Disease Control and Prevention Web site. 2007. Available at: <http://www.flu.gov/planning-preparedness/community/commaskguidance.pdf>. Accessed May 2, 2007.
34. Rengasamy S, Eimer B C, Shaffer RE. Nanoparticle filtration performance of commercially available dust masks. *J Int Soc Respir Prot* 2008;25:27-41.
35. Centers for Disease Control and Prevention. Guidelines for environmental infection control in health-care facilities: recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). *MMWR Morb Mortal Wkly Rep* 2003;52:1-43.
36. Federal Emergency Management Agency. *Guidelines for managing water supplies*. Federal Emergency Management Agency Web site. 2007. Available at: <http://www.ready.gov/water>. Accessed August 30, 2007.
37. Centers for Disease Control and Prevention. *Keep food and water safe after a natural disaster or power outage*. Centers for Disease Control and Prevention Web site. 2005. Available at: <http://www.bt.cdc.gov/disasters/pdf/foodwater.pdf>. Accessed November 11, 2007.
38. Centers for Disease Control and Prevention. *Emergency water storage and purification*. Centers for Disease Control and Prevention Web site. 2003. Available at: <http://www.bt.cdc.gov/disasters/earthquakes/food.asp>. Accessed November 11, 2007.
39. Centers for Disease Control and Prevention. *Disinfecting wells following an emergency*. Centers for Disease Control and Prevention Web site. 2006. Available at: <http://www.bt.cdc.gov/disasters/pdf/wellsdisinfect.pdf>. Accessed November 11, 2007.
40. U.S. Department of Agriculture. *Handling food safely*. Food Safety and Inspection Service. U.S. Department of Agriculture Web site. 2006. Available at: http://www.fsis.usda.gov/fact_sheets/Basics_for_Handling_Food_Safely/index.asp. Accessed November 19, 2007.
41. Rebmann T. Emergency management. In: Carrico R, ed. *APIC Text of Infection Control and Epidemiology*, 3rd ed. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2009; Chapter 117.
42. California Emergency Medical Services Authority. *Patient decontamination recommendations for hospitals*. California Emergency Medical Services Authority Web site. 2005. Available at: http://www.tvfr.com/safetytips/emer_prep/hospital/docs/EMSA_Recommendations_0705.pdf. Accessed November 25, 2007.
43. WebMD. *CBRNE – chemical decontamination*. WebMD Web site. 2006. Available at: <http://www.emedicine.com/emerg/topic893.htm>. Accessed November 25, 2007.
44. Army, Marine Corps, Navy, Air Force. Patient evacuation and decontamination. In: *Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination*. U.S. Army Web site. 2006. Available at: <http://www.globalsecurity.org/wmd/library/policy/army/fm/3-11-5/fm-3-11-5.pdf>. Accessed May 30, 2013.

45. Centers for Disease Control and Prevention. *Interim pre-pandemic planning guidance: Community strategy for pandemic influenza mitigation in the United States*. Centers for Disease Control and Prevention Web site. 2007. Available at: http://www.flu.gov/planning-preparedness/community/community_mitigation.pdf. Accessed January 3, 2008.
46. Chou T. Environmental services. In: Carrico R, ed. *APIC Text of Infection Control and Epidemiology*, 3rd ed. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2009; Chapter 100.
47. Association of PeriOperative Registered Nurses. *Standards, and Recommended Practices*. Denver, CO: Association of PeriOperative Registered Nurses, 2009.
48. Centers for Disease Control and Prevention. Severe acute respiratory syndrome. Community containment measures, including non-hospital isolation and quarantine. Centers for Disease Control and Prevention Web site. 2005. Available at: <http://www.cdc.gov/sars/guidance/D-quarantine/>. Accessed September 23, 2009.
49. Rutala WA, Weber DJ, and the Healthcare Infection Control Practices Advisory Committee (HICPAC). Guidelines for disinfection and sterilization in healthcare facilities. Centers for Disease Control and Prevention Web site. 2008. Available at: http://www.cdc.gov/hicpac/Disinfection_Sterilization/toc.html. Accessed December 5, 2008.
50. Kidney Community Emergency Response Coalition Web site. 2009. Available at: <http://www.kcercoalition.com/>. Accessed May 29, 2013.
51. Centers for Medicare and Medicaid Services. Emergency preparedness for dialysis facilities. A guide for chronic dialysis facilities. Centers for Medicare and Medicaid Services Web site. 2009. Available at: <http://www.cms.hhs.gov/esrdnetworkorganizations/downloads/emergencypreparednessforfacilities2.pdf>. Accessed October 27, 2009.
52. National Kidney Foundation: Kidney Dialysis Outcomes Quality Initiative. Clinical practice guidelines for vascular access: Update 2000. *Am J Kidney Dis* 2000;37(suppl 1):S157–S159.
53. Garcia-Houchins S. Dialysis. In: Carrico R, ed. *APIC Text of Infection Control and Epidemiology*, 3rd ed. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2009; Chapter 48.
54. Association for Advancement of Medical Instrumentation. *AAMI Standards and Recommended Practices, Dialysis*. Arlington, VA: American National Standards Institute, 2003.
55. Centers for Disease Control and Prevention. Guideline for prevention of surgical site infections. *Infect Control Hosp Epidemiol* 1999;20(4):247-278.
56. American Association for the Advancement of Medical Instrumentation. *Sterilization in healthcare facilities (STBK8-1-293)*. Arlington, VA: American Association for the Advancement of Medical Instrumentation, 1998.
57. Institute for Healthcare Improvement. *Implement the central line bundle*. Institute for Healthcare Improvement Web site. 2008. Available at: <http://www.ihl.org/knowledge/Pages/Changes/ImplementtheCentralLineBundle.aspx>. Accessed October 1, 2009.
58. Greene L, Marx J, Oriola S, eds. *Association for Professionals in Infection Control and Epidemiology Guide to the Elimination of Catheter-associated Urinary Tract Infections*. Washington, DC: APIC, 2008.
59. Saint S. Bladder bundle. 2008. Available at: <http://www.ahrq.gov/research/findings/evidence-based-reports/patientsftyupdate/ptsafetyIIchap9.pdf>. Accessed October 1, 2009.
60. American Academy of Pediatrics. Infection prevention and control in pediatric ambulatory settings. *Pediatrics* 2007;120(3):650-665.
61. World Health Organization. Vector and pest control. In: *Environmental Health in Emergencies and Disasters*. World Health Organization Web site. 2002. Available at: http://www.who.int/water_sanitation_health/hygiene/emergencies/em2002chap10.pdf. Accessed September 28, 2009.
62. Centers for Disease Control and Prevention. *Rodent control after a disaster*. Centers for Disease

Infection Prevention for Ambulatory Care Centers During Disasters

- Control and Prevention Web site. 2006. Available at: <http://emergency.cdc.gov/disasters/rodents.asp>. Accessed September 16, 2009.
63. American Veterinary Medical Association. *AVMA policy service animals*. American Veterinary Medical Association Web site. 2008. Available at: <https://www.avma.org/KB/Policies/Pages/Service-Animals.aspx>. Accessed September 16, 2009.
64. Darling KT. Animals visiting healthcare facilities. In: Carrico R, ed. *APIC Text of Infection Control and Epidemiology*, 3rd ed. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2009; Chapter 68.
65. National Association of Medical Examiners. *NAME mass fatality plan*. National Association of Medical Examiners Web site. 2006. Available at: <https://netforum.avectra.com/temp/ClientImages/NAME/31434c24-8be0-4d2c-942a-8afde79ec1e7.pdf>. Accessed May 30, 2013.
66. Hanzlick R, Nolte K, deJong J, and The National Association of Medical Examiners Biological and Chemical Terrorism Committee and Bioterrorism and Infectious Disease Committee. *The medical examiner/coroner's guide for contaminated deceased body management*. The National Association of Medical Examiners Web site. 2006. Available at: http://thename.org/index.php?option=com_docman&task=doc_details&gid=13&Itemid=26. Accessed September 29, 2009.
67. Pfeiffer J. Postmortem care. In: Carrico R, ed. *APIC Text of Infection Control and Epidemiology*, 3rd ed. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2005; Chapter 109.
68. Borio L, Inglesby T, Peters CJ, Schmaljohn AL, Hughes JM, Jahrling PB, et al. Hemorrhagic fever viruses as biological weapons. Medical and public health management. *JAMA* 2002;287(18):2391-2405.
69. Centers for Disease Control and Prevention. *Smallpox response plan and guidelines*. Version 3.0. Centers for Disease Control and Prevention Web site. 2002. Available at: <http://www.bt.cdc.gov/agent/smallpox/response-plan/index.asp>. Accessed April 4, 2003.
70. Kirkis EJ. A myth too tough to die: The dead of disasters cause epidemics of disease. *Am J Infect Control* 2006;34(6):331-334.
71. Nolte KB, Hanzlick RL, Payne DC, Kroger AT, Oliver WR, et al. Medical examiners, coroners, and biologic terrorism: A guidebook for surveillance and case management. *MMWR Morb Mortal Wkly Rep* 2004;53(RR-8):1-27.
72. Centers for Disease Control and Prevention. *Post-mortem care and safe autopsy procedures for novel H1N1 influenza*. Centers for Disease Control and Prevention Web site. 2009. Available at: http://www.cdc.gov/h1n1flu/post_mortem.htm. Accessed September 25, 2009.
73. Carrico RM, Rebmann T, English JF, Mackey J, Cronin SN. Infection prevention competencies for hospital-based healthcare personnel. *Am J Infect Control* 2008;36(10):691-701.
74. Rebmann T, English JF, Carrico R. Disaster preparedness: Results from focus groups conducted at the 2006 APIC Conference. *Am J Infect Control* 2007;35(6):374-381.
75. Centers for Disease Control and Prevention. *Supplement I: Infection control in healthcare, home, and community settings. IX. Occupational health issues*. Centers for Disease Control and Prevention Web site. 2004. Available at: <http://www.cdc.gov/ncidod/sars/guidance/I/occupational.htm>. Accessed November 8, 2009.
76. Centers for Disease Control and Prevention. *Cover your cough*. Centers for Disease Control and Prevention Web site. 2009. Available at: <http://www.cdc.gov/flu/protect/covercough.htm>. Accessed September 13, 2009.
77. Dubberke ER, Gerding DN. Rationale for Hand Hygiene Recommendations after Caring for a Patient with *Clostridium difficile* Infection. A Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute Care Hospitals, Fall 2011 Update. Available at: <http://www.shea-online.org/Portals/0/CDI%20hand%20hygiene%20Update.pdf>. Accessed October 5, 2012.
78. Kansas State Department of Education. *Daily refrigerator/freezer temperature log*. Kansas State Department of Education Web site. 2008.

79. Haas JP. Hand hygiene. In: Carrico R, ed. *APIC Text of Infection Control and Epidemiology*, 3rd ed. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2009; Chapter 19.
80. Faeurbach L. Table 4-5. ICRA activities for floods, sewage, spills, and malfunction. In: Arias KM, Soule BM, eds. *The APIC/JCR Infection Control Workbook*. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2006; Chapter 4.
81. Carrico R, Rebmann T. Planning for and managing infectious disease emergencies. In: Arias KM, Soule BM, eds. *The APIC/JCR Infection Control Workbook*, 2nd ed. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2010; Chapter 5.
82. Rebmann T. APIC State-of-the-Art report: The role of the infection preventionist in emergency management. *Am J Infect Control* 2009;37:271-281.

APPENDIX A

Statement of Authority for Infection Prevention at the Ambulatory Care Center

Philosophy: The infection preventionist/infection prevention designee is aware that infections, whether brought into the facility (i.e., community acquired) or obtained on-site (i.e., healthcare-associated), represent a potential hazard to all persons having contact within the ambulatory care center. Therefore, effective measures must be implemented to prevent infections.

Description: The infection preventionist/infection prevention designee shall be responsible for the ambulatory care center infection prevention program to include the implementation of a well-designed infection prevention plan. The plan will include surveillance and infection prevention measures.

The infection preventionist/infection prevention designee shall have authority over the infection prevention plan to include the responsibility of implementation, maintenance, and evaluation.

Goal: This authority statement for the infection preventionist/infection prevention designee is designed to allow immediate implementation measures deemed necessary to prevent infections.

The infection preventionist/infection prevention designee shall have the authority to immediately institute any and all appropriate control measures where there are any indications or risk to ambulatory care center patients, visitors, or staff.

1. The infection preventionist/infection prevention designee is authorized to make the final decision regarding the infection prevention plan.
2. The infection preventionist/infection prevention designee is authorized to make the final decision regarding questions of isolation and use of personal protective equipment, including patient placement and disposition.
3. The infection preventionist/infection prevention designee is authorized to make the final decision regarding environmental controls, including the potential closure of any area within the boundaries or grounds of the ambulatory care center.

Ambulatory care center director:

Date:

Infection preventionist/infection prevention designee:

Date:

APPENDIX B

List of Infection Prevention Equipment/Supplies Needed for Ambulatory Care Centers

Other supplies and equipment will be required for ACC functioning. The items included on this list are specific to infection prevention and should be supplemental to traditional supplies needed to run an ACC during disasters.

- Waste disposal supplies**
 - Trash cans for regular trash
 - Red bags or containers for regulated medical waste disposal
 - Biohazard stickers or labels for regulated medical waste disposal
 - Toilets or portable waste elimination systems
 - Urinals
 - Bedpans
 - Small buckets/containers or bags for human waste elimination
 - Sharps containers
- Safety devices for giving injections or handling medication**
- Medication/vaccines for treatment and prophylaxis of infectious diseases**
- Refrigerator for storing medications and vaccines**
- Personal protective equipment (PPE)**
 - Respirators (N95 or Powered air purifying respirators [PAPR]/PAPR supplies)
 - Masks (surgical/procedure masks)
 - Gowns (patient care gowns)
 - Gloves (nonsterile and sterile procedure gloves)
 - Eye protection (goggles or face shields)
- Hand hygiene products**
 - Alcohol-based hand rubs (ABHR) and dispensing system
 - Soap (non-antimicrobial or antimicrobial)
 - Paper towels
- Disinfectants**
 - Towelettes (antimicrobial wipes)
 - Disinfectant (EPA-registered chemical germicide)
 - Chemicals for medical equipment cleaning, disinfecting, and sterilizing (when applicable)

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- Water decontamination products**
 - Chlorine or iodine tablets
 - Nonscented household bleach (sodium hypochlorite)
 - Commercial-grade water filters
 - Coffee filters
- Syndromic surveillance supplies**
 - Thermometers (disposable or supplies for disinfection between individuals)
 - Facial tissues
- Environmental controls**
 - Fans for creating negative pressure
 - Plastic, drywall, or plywood for barrier creation
 - Sinks and/or hand hygiene stations
 - Portable HEPA Filter units
- Food safety**
 - Thermometer for monitoring refrigerator/freezer and food temperature
- Forms**
 - Syndromic surveillance assessment/triage form
 - Infection control triage
- Informational/educational products/signage**
 - Hand hygiene techniques
 - Respiratory etiquette
 - Infection control precautions
 - Disposal of waste in an ACC
 - Syndromic surveillance poster
 - Putting on and taking off personal protective equipment
- Patient decontamination supplies***
 - Level C suits
 - Chem tape
 - Portable decontamination shower or equivalent
- Morgue bags**

*Only needed if patient decontamination is going to occur at site.

APPENDIX C

Syndromic Surveillance Assessment/Triage Form

This form should be completed by the following individual(s) in descending order by preference: a) healthcare provider/professional on-site and b) designated, trained ACC worker or volunteer

Name _____ Temperature: _____ (in degrees Fahrenheit)

Do you currently have any of the following symptoms?

Yes No

- Cough
- If you have a cough, is your sputum bloody?
- Runny nose
- Loose or unformed stools
- Watery or explosive diarrhea stools
- Bloody stools
- Rash
- If you have a rash, is it itchy?
- Stiff/sore neck
- Red eye or drainage from eye(s)
- Wound or lesion
- Have you been hospitalized within the past 3 months?
- Have you been told that you have a multidrug resistant organism (MRSA, VRE, etc.)?
- Are you an ACC worker?
- Are you currently on any antibiotics/treatment? If Yes, list _____
- Have you received any vaccinations in accordance with health department recommendations related to this event? If Yes, list and give date administered _____

Name of person completing the form

Date

APPENDIX D

Syndromic Surveillance Poster

**The
following
symptoms/
conditions
should be**

reported

to a worker

***as soon as
possible***

- Fever
- Cough
- Bloody nasal drainage
- Runny nose
- Loose or unformed stools
- Watery or explosive stools
- Rash
- Stiff/sore neck
- Red eye or drainage from eye(s)
- Wound or lesion
- General feeling of illness (fatigue, body aches, headache, etc.)

APPENDIX E

Infection Control Triage

This table is intended as a guideline and is not all inclusive. Standard Precautions (see Standard Precautions section) should be used for all patient encounters.

Individuals with severe or rapidly progressive illnesses should receive a medical evaluation immediately and may need to be transferred to a hospital or other type of healthcare facility.

Symptoms/Syndrome	Isolation Precaution Category ¹	Individual Placement/ Separation
Respiratory		
Cough, runny nose, watery eyes	Standard	None
Fever (temp > 100.4°F) & cough in adults	Droplet	Cohorting Spatial distancing ²
Fever (temp > 100.4°F) & cough in children	Droplet Contact	Cohorting Spatial distancing ²
Fever (temp > 100.4°F), cough with bloody sputum, and weight loss	Airborne ³	AIIR or negative pressure area/room Cohorting Spatial distancing ²
Vomiting	Standard	Social distancing ⁴
Loose or unformed stools	Standard	None
Watery or explosive stools, with or without blood	Contact	Cohorting Spatial distancing ²
Fever (temp > 100.4°F) & rash	Airborne ³	Cohorting Spatial distancing ²
Fever (temp > 100.4°F), upper chest rash, and stiff/sore neck	Droplet	Cohorting Spatial distancing ²
Eye infections (drainage from eye)	Standard	Social distancing ⁴
Draining wound/lesion	Contact	Cohorting Spatial distancing ²
Itchy rash without fever	Contact	Cohorting Spatial distancing ²

¹If the disaster is an infectious disease disaster (bioterrorism or pandemic) and the causative disease is known, the appropriate isolation precautions for that disease should be used.

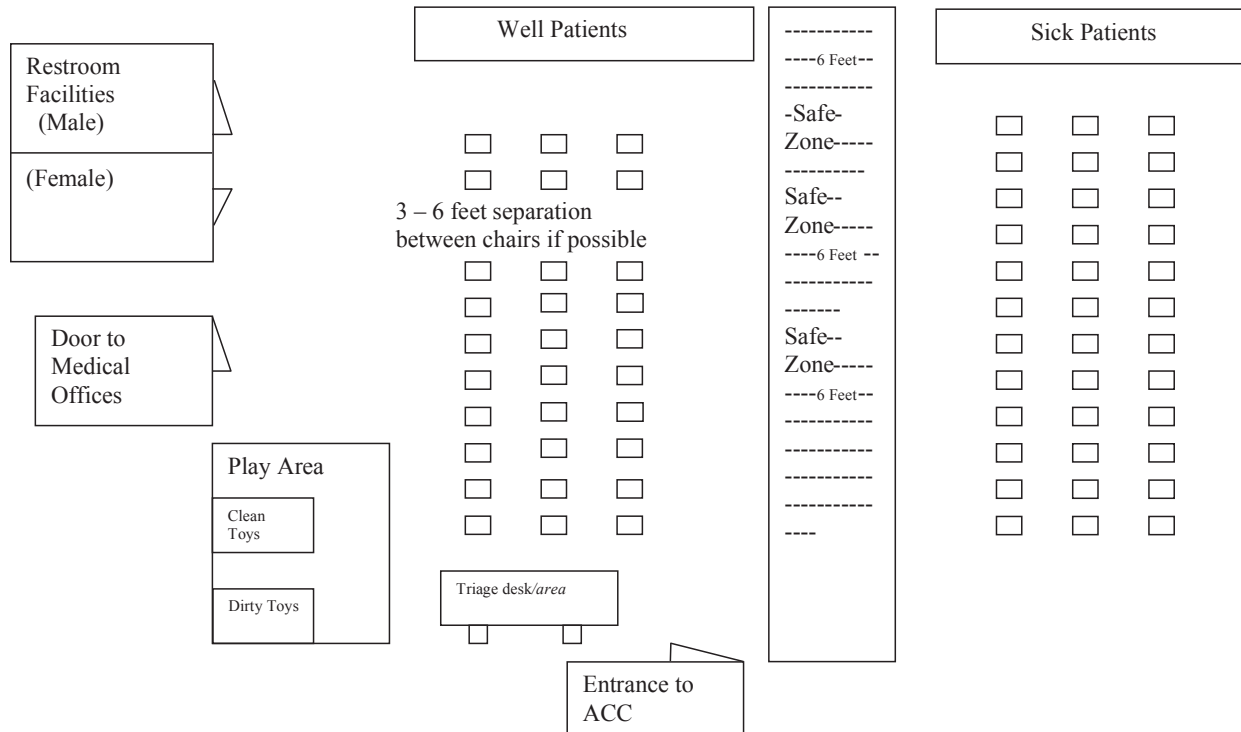
²Spatial distancing involves separating the potentially contagious person from others by a distance of at least 3 to 6 feet which should include placement in a private room when available.

³Transfer to a hospital or other medical facility with an AIIR as soon as possible, unless the ACC has the ability to create an AIIR or negative pressure area/room on-site.

⁴Social distancing for eye infections and vomiting consists of instructing the symptomatic individual or parent (if the individual is a child) to remain with the family unit and away from other individuals in the ACC, perform frequent hand hygiene, and inform ACC workers if symptoms progress. These actions should continue until symptoms subside.

APPENDIX F

Example of Ambulatory Care Center Triage/Waiting Area Layout



APPENDIX G

Suggested Work Restrictions for Healthcare Workers with a Known or Suspected Contagious Disease/Condition^{75*}

Disease/Condition	Work Restriction	Duration
Conjunctivitis	Restrict from patient care activities	Until eye discharge ceases
Cytomegalovirus infection	No restriction	NA
Diarrheal illness - Acute stage (i.e., symptomatic) - Convalescent stage	Restrict from patient care activities and food handling Restrict from care of high-risk patients	Until symptoms resolve Until symptoms resolve; consult with public health about need for negative stool cultures
Diphtheria	Exclude from duties	Until antimicrobial therapy completed and two cultures obtained ≥ 24 hours apart are negative
Enteroviral infections	Restrict from care of infants, neonates, and immunocompromised patients	Until symptoms resolve
Hepatitis A	Restrict from patient care activities and food handling	Until 7 days after onset of jaundice
Hepatitis B - Staff with acute or chronic Hep B surface antigenemia - Staff with acute or chronic Hep B e antigenemia	Assign to non-exposure-prone procedures Perform formal review to determine what activities worker can do	NA Until hepatitis B e antigen is negative
Hepatitis C	No recommendation	
Herpes simplex - Genital - Hands (herpetic whitlow) - Orofacial	No restriction Restrict from patient care activities Assess for need to restrict worker from care of high-risk patients	NA Until lesions heal
Human immunodeficiency virus	Perform formal review to determine what activities worker can do	

(continued)

Appendix G: Suggested Work Restrictions for Healthcare Workers with a Known or Suspected Contagious Disease/Condition^{75*} *cont.*

Disease/Condition	Work Restriction	Duration
Influenza - Seasonal - Avian - Novel H1N1 or other pandemic strain - Those working with non-immunocompromised patients - Those working with severely immunocompromised patients	Restrict from patient care activities Restrict from patient care activities Restrict from patient care activities	Until 5 days after the onset of symptoms Until 24 hours after resolution of fever, unless an alternative diagnosis is established or diagnostic tests are negative for influenza A virus Until 24 hours after resolution of fever without the use of antipyretics Reassignment or work restriction for 7 days or until symptoms have resolved, whichever is longer
Measles - Active - Postexposure	Exclude from duties Exclude from duties	Until 7 days after rash appears Until 5th day after 1st exposure through 21st day after last exposure and/or 4 days after rash appears
Meningococcal infections	Exclude from duties	Until 24 hours after start of therapy
Mumps - Active - Postexposure	Exclude from duties Exclude from duties	Until 9 days after onset of parotitis From 9th day after 1st exposure through 26th day after last exposure or until 9 days after onset of parotitis
Pediculosis (lice)	Restrict from patient care activities	Until treated and observed to be free of adult and immature lice
Pertussis - Active - Postexposure (asymptomatic) - Postexposure (symptomatic)	Exclude from duties No restriction; prophylaxis recommended Exclude from duties	From beginning of catarrhal stage through 3rd wk after onset of paroxysms or until 5 days after start of effective therapy Until 5 days after start of effective therapy
Respiratory infections, viral	Assess for need to restrict worker from care of high-risk patients	Until acute symptoms resolve
Rubella - Active - Postexposure (susceptible personnel)	Exclude from duties Exclude from duties	Until 5 days after rash appears From 7th day after 1st exposure through 21st day after last exposure
Scabies	Restrict from patient care activities	Until cleared by medical evaluation

(continued)

Appendix G: Suggested Work Restrictions for Healthcare Workers with a Known or Suspected Contagious Disease/Condition^{75*} cont.

Disease/Condition	Work Restriction	Duration
Severe acute respiratory syndrome - Active - Postexposure (asymptomatic following high-risk exposure) high-risk procedure for SARS: being present in room during an aerosolizing procedure when not wearing appropriate PPE ¹ - Postexposure (asymptomatic following low-risk exposure) low-risk procedure for SARS: caring for SARS patient without proper PPE during any activities except aerosolizing procedures ¹ - Postexposure (symptomatic)	Exclude from duties Exclude from duties No restriction, but person should be monitored for 10 days past exposure Exclude from duties	Until symptoms resolve and/or 10 days after resolution of fever, provided respiratory symptoms are absent or improving Until 10 days after the date of the last high-risk exposure Monitor for 10 days past exposure Until cleared by medical evaluation as being noncontagious
<i>Staphylococcus aureus</i> infection - Active, draining skin lesions - Carrier state	Restrict from patient care activities No restriction unless person is epidemiologically linked to infection transmission	Until lesions have resolved
Streptococcal infection, group A	Restrict from patient care activities and food handling	Until 24 hours after adequate treatment started
Tuberculosis - Active disease - PPD converter	Exclude from duties No restriction	Until cleared by medical evaluation as being noncontagious
Varicella - Active - Postexposure (susceptible personnel)	Exclude from duties Exclude from duties	Until all lesions dry and crust From 10th day after 1st exposure through 21st day (28th day if VZIG is given) after last exposure
Zoster - Localized in healthy person - Generalized or localized in immunosuppressed person - Postexposure (susceptible personnel)	Cover lesions; restrict from care of high-risk individuals Restrict from patient care activities Restrict from patient care activities	Until all lesions dry and crust Until all lesions dry and crust From 10th day after 1st exposure through 21st day (28th day if VZIG is given) after last exposure or, if varicella occurs, until all lesions dry and crust

*Adapted from: Table 26-2 in Sebazco S. Occupational health. In: Carrico R, ed. *APIC Text of Infection Control and Epidemiology*, 3rd ed. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2009; Chapter 26.6

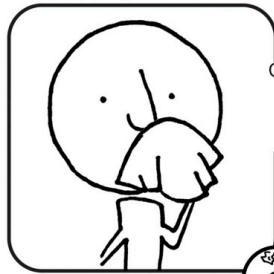
¹Centers for Disease Control and Prevention. *Supplement I: Infection control in healthcare, home, and community settings. IX. Occupational health issues*. Centers for Disease Control and Prevention Web site. 2004. Available at: <http://www.cdc.gov/ncidod/sars/guidance/1/occupational.htm>. Accessed November 8, 2009.

APPENDIX H

Respiratory Etiquette Poster⁷⁶

Stop the spread of germs that make you and others sick!

Cover your Cough



Cover your mouth and nose with a tissue when you cough or sneeze or



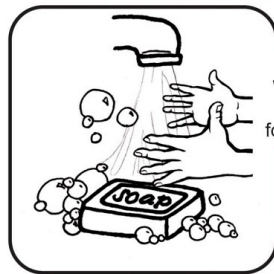
cough or sneeze into your upper sleeve, not your hands.

Put your used tissue in the waste basket.



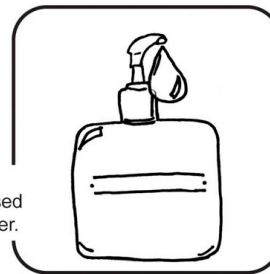
Clean your Hands

after coughing or sneezing.



Wash hands with soap and warm water for 20 seconds

or
clean with alcohol-based hand cleaner.



Minnesota Department of Health
717 SE Delaware Street
Minneapolis, MN 55414
612-676-6414 or 1-877-676-6414
www.health.state.mn.us



APPENDIX I

Hand Hygiene Poster

Wash Your Hands: *The Right Way!*

Alcohol Based Hand Rubs*

Procedure for using Alcohol Based Hand Rubs:

- 1 Apply product to the palm of one hand using the following approximate amounts:
 - **Gel:** dime-sized amount
 - **Foam:** egg-sized amount
- 2 Rub hands together until hands are dry, water is not required

** Alcohol-based products are preferred in all cases except for visibly dirty hands, during an outbreak of C. difficile, or after exposure to Bacillus anthracis.*



Handwashing

Procedure for Handwashing:



Wet your hands with clean running water and apply soap



Rub hands together to make lather and scrub for 15-20 seconds



Rinse hands well under running water



Dry your hands with a paper towel or air dryer



If possible, use your paper towel to turn off the faucet and open bathroom door

With either method, be sure to cover all surfaces of the hands and fingers including:

- a. Under your nails
- b. Around your wrists
- c. In between your fingers

APPENDIX J

Isolation Signs/Posters

CONTACT ISOLATION

Visitors, contact the nurse's station before entering area



+



OR



GOWN & GLOVES + HAND HYGIENE

REQUIRED TO ENTER AREA

- Gown and gloves required to enter area
- Hand hygiene before and after patient contact
- Remove gown and gloves and discard before leaving patient area

DROPLET ISOLATION

Visitors, contact the nurse's station before entering area



+



OR



Surgical/Procedure Mask + HAND HYGIENE REQUIRED TO ENTER AREA

- Surgical/Procedure mask required to enter area
- Hand hygiene before and after patient contact
- Remove mask and discard before leaving patient area

AIRBORNE ISOLATION

Visitors, contact the nurse's station before entering area



N95 Respirator + HAND HYGIENE REQUIRED TO ENTER AREA

- Fit-tested N95 respirator required to enter area
- Hand hygiene before and after patient contact
- Do not remove respirator until after leaving the patient room/isolation area
- Door to area should remain closed

APPENDIX K

Hand Hygiene Techniques²

Alcohol-based Hand Rubs: Alcohol-based hand rubs (ABHR) do not require water for use and are the preferred method of hand hygiene when hands are not visibly dirty.

Procedure for using ABHRs:

1. Apply product to the palm of one hand using the following approximate amounts:
 - Liquid gel: dime-sized amount
 - Foam: egg-sized amount
2. Rub hands together
3. Rub the product over all surfaces of hands and fingers until hands are dry
 - Failure to cover all surfaces of the hands and fingers will greatly reduce the efficacy of ABHRs

Alcohol-based products should not be used in situations involving an outbreak of *C. difficile* or after exposure to *Bacillus anthracis*. The physical action of washing and rinsing hands under such circumstances is recommended because alcohols, chlorhexidine, iodophors, and other antiseptic agents have poor activity against spores.²

It should be noted that ABHRs are not effective on hands that are visibly dirty or those contaminated with organic materials. Hands that are visibly dirty or contaminated with organic material must be washed with soap and water, even if ABHRs are to be used as an adjunct measure.

Handwashing: Handwashing involves the use of soap and water. Procedure for Handwashing:

1. Wet your hands with clean running water and apply soap
2. Rub hands together to make lather and scrub all surfaces for 15–20 seconds, making sure you clean
 - a. Under your nails
 - b. Around your wrists
 - c. In between your fingers
3. Rinse hands well under running water
4. Dry your hands with a paper towel or air dryer
5. If possible, use your paper towel to turn off the faucet
6. If possible, use paper towel to open bathroom door
7. Dispose of paper towel

Infection Prevention for Ambulatory Care Centers During Disasters

Plain or antimicrobial soap should be used for handwashing unless otherwise indicated.² If bar soap is used, it should be kept on racks that allow drainage of water. If liquid soap is used, the dispenser should be replaced or cleaned and filled with fresh product when empty; liquids should not be added to a partially full dispenser.

Hand Hygiene using Antimicrobial-Impregnated Wipes (i.e., towelettes)

Antimicrobial-impregnated wipes are not as effective as handwashing with soap and water or the use of ABHRs at reducing infectious organisms on the hands.⁷⁷ These wipes should not be used for healthcare worker hand hygiene.⁷⁷

APPENDIX L

PPE Usage Posters from CDC²

PUTTING ON PPE

Type of PPE used will vary based on the level of precautions required, e.g., Standard and Contact, Droplet, or Airborne Isolation Precautions

GOWN

- Fully cover torso from neck to knees, arms to end of wrist, and wrap around the back
- Fasten in back at neck and waist



MASK OR RESPIRATOR

- Secure ties or elastic band at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



GOGGLES/FACE SHIELD

- Put over face and eyes and adjust to fit



GLOVES

- Extend to cover wrist of isolation gown



SAFE WORK PRACTICES

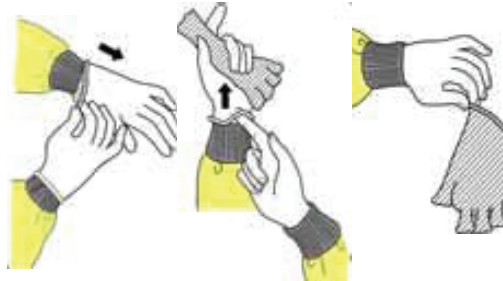
- *Keep hands away from face*
- *Limit surfaces touched*
- *Change when torn or heavily contaminated*
- *Perform hand hygiene*

REMOVING PPE

Remove PPE at doorway before leaving patient room or in anteroom; remove respirator outside of room

GLOVES

- Outside of gloves are contaminated!
- Grasp outside of glove with opposite gloved hand; peel off
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist



GOGGLES/FACE SHIELD

- Outside of goggles or face shield are contaminated!
- To remove, handle by “clean” head band or ear pieces
- Place in designated receptacle for reprocessing or in waste container



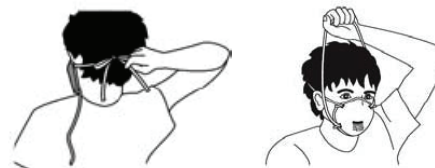
GOWN

- Gown front and sleeves are contaminated!
- Unfasten neck, the waist ties
- Remove gown using a peeling motion; pull gown from each shoulder toward the same hand
- Gown will turn inside out
- Hold removed gown away from body, roll into a bundle and discard into waste or linen receptacle



MASK OR RESPIRATOR

- Front of mask/respirator is contaminated – DO NOT TOUCH!
- Grasp bottom then top ties/elastics and remove
- Discard in waste container



PERFORM HAND HYGIENE

Immediately after removing PPE

APPENDIX M

Respirator Usage Poster from CDC

General Procedures for Properly Putting on and Taking Off a Disposable Respirator

- Wash your hands before handling the respirator
- If you have used a respirator before that fit you, you should use the same make, model, and size
- Inspect the respirator for damage. If your respirator has damages, DO NOT USE IT. Get a new one.
- Anything that comes between the respirator and your face will make the respirator less effective. Do not allow facial hair, hair, jewelry, glasses, or clothing to come between your face and the respirator, or interfere with the placement of the respirator on the face.

If respirators are used for people performing work-related duties, employers must comply with the Occupational Safety and Health Administration's (OSHA) Respiratory Protection Standard, 29 CFR 1910.134. Consult www.OSHA.gov for more information.

Put the respirator on correctly: NOTE: Follow the instructions that come with the respirator. Manufacturer instructions for many NIOSH approved disposable respirators can also be found at: http://www.cdc.gov/NIOSH/npptl/topics/respirators/disp_part/


Always check your fit when you wear a respirator. There are two steps to assessing the fit.

1 Position the respirator in your hands with the nosepiece at your fingertips.

1 First, place both hands completely over the respirator, then take a quick breath in to check whether the respirator seals tightly to the face. Be careful not to disturb the position of the respirator.

2 Cup the respirator in your hand, with the nosepiece at your fingertips, allowing the headbands to hang freely below your hand.

2 Next, place both hands completely over the respirator and exhale.



Infection Prevention for Ambulatory Care Centers During Disasters



Position the respirator under your chin with the nosepiece up. The top strap goes over your head, resting high at the top back of your head. The bottom strap is positioned around the neck and below the ears. The straps do not cross over one another. If there is only 1 headband, it should rest high at the back of your head.



If during either step, air leaks around the nose, readjust the nosepiece as described above. If air leaks at the mask edges, work the straps back along the sides of your head until a proper seal is achieved.



Most disposable respirator models have a metal nose clip. Place your fingertips from both hands at the top of the metal nose clip. Slide your fingertips down both sides of the metal nose strip to mold the nose area to the shape of your nose.



If you cannot achieve a proper fit and seal, ask for help from someone else, try a different size in that respirator model, or try a different respirator model. Different models of respirators may fit faces differently. Do NOT attempt to get a better fit by tying the straps into “knots” to shorten them.

When taking off a respirator



Front of respirator may be contaminated. DO NOT TOUCH!



Grasp bottom strap and pull over back of head without touching respirator, then with top strap and carefully remove.



Discard in waste container and wash your hands thoroughly after removing the respirator.

WASH YOUR HANDS THOROUGHLY AFTER REMOVING THE RESPIRATOR

APPENDIX N

Water Decontamination Methods

Boiling water*

- Place water in a large kettle or pot
- Bring to rolling boil then allow to boil for 1 minute³⁷
- Cool water in a covered container before consumption

*Boiling will not remove chemical contaminants. Water contaminated with chemicals should not be consumed.

Chemical Treatment:

- Chlorine tablets (5.25%–6% sodium hypochlorite as the only active ingredient)
 - Follow directions that come with the tablets³⁷
- Iodine tablets
 - Follow directions that come with the tablets³⁷
- Bleach (unscented household chlorine bleach [5.25% sodium hypochlorite])
 - Clear water:
 - Add 1/8 teaspoon of bleach per gallon of water
 - Mix thoroughly
 - Allow to sit for 30 minutes before consumption³⁸
 - Cloudy water:
 - Add 1/4 teaspoon of bleach per gallon of water
 - Mix thoroughly
 - Allow to sit for 30 minutes before consumption³⁸

APPENDIX O

Well Water Disinfection^{39**}

Amount of Chlorine Needed Per 10 Feet (3.1 Meters) of Water in Well*

Inside Diameter of Well Casing (Standard/SI)	Amount of 5.25% Sodium Hypochlorite (Unscented Laundry Bleach) Standard/SI			Amount of 65% Calcium Hypochlorite (Chlorine Granules) Standard/SI		
	<i>Disinfection time for concentration of disinfectant</i>					
	100 ppm for 2 hours	50 ppm for 8 hours	25 ppm for 24 hours	100 ppm for 2 hours	50 ppm for 8 hours	25 ppm for 24 hours
1¼ inches or 3.18 cm	⅛ fluid ounce or 3.7 mL	¾ tsp or 3.7 mL	⅓ tsp or 3 mL	Not practical to use chlorine granules for these small-diameter well casings		
2 inches or 5.08 cm	½ fluid ounce or 14.79 mL	¼ fluid ounce or 7.39 mL	⅛ fluid ounce or 3.7 mL			
3 inches or 7.62 cm	1 fluid ounce or 29.57 mL	½ fluid ounce or 14.79 mL	¼ fluid ounce or 7.39 mL			
4 inches or 10.16 cm	1½ fluid ounces or 44.36 mL	¾ fluid ounce or 22.18 mL	⅜ fluid ounce or 11.09 mL			
6 inches or 15.24 cm	4 fluid ounces or 118.29 mL	2 fluid ounces or 59.15 mL	1 fluid ounce or 29.57 mL	¼ ounce or 7.09 grams	⅛ ounce or 3.54 grams	⅓ ounce or 1.77 grams
8 inches or 20.32 cm	7 fluid ounces or 118.29 mL	3½ fluid ounces or 103.51 mL	1¾ fluid ounces or 51.75 mL	½ ounce or 14.17 grams	¼ ounce or 7.09 grams	⅓ ounce or 3.54 grams
10 inches or 25.40 cm	10 fluid ounces or 295.74 mL	5 fluid ounces or 146.87 mL	2 fluid ounces or 59.15 mL	¾ ounce or 21.26 grams	⅜ ounce or 10.63 grams	⅓ ounce or 5.32 grams
12 inches or 30.48 cm	2 cups or 473.18 mL	1 cup or 236.59 mL	½ cup or 118.29 mL	1 ounce or 28.35 grams	½ ounce or 14.17 grams	¼ ounce or 7.09 grams

18 inches or 25.72 cm	4½ cups or 1.06 L	2¼ cups or 532.32 mL	1⅞ cups or 266.16 mL	2½ ounces or 70.87 grams	1¼ ounces or 35.44 grams	¾ ounce or 21.26 grams
2 feet or 60.96 cm	7½ cups or 1.77 L	3¾ cups or 887.21 mL	1⅞ cups or 443.60 mL	4½ ounces or 127.57 grams	2¼ ounces or 63.79 grams	1⅞ ounces or 31.89 grams
3 feet or 91.44 cm	17½ cups or 4.14 L	8¾ cups or 7.01 L	4⅞ cups or 1.04 L	10 ounces or 283.5 grams	5 ounces or 141.75 grams	2½ ounces or 70.87 grams

Notes: 1 heaping tablespoon of 65% chlorine powder = ½ ounce; 8 fluid ounces = 1 cup.
cm, centimeter; L, liter; mL, milliliter; ppm, parts per million; SI, Système International d'Unités (metric).

*If you are unsure about the depth of the well, make an educated guess, then increase the suggested amount of chlorine by 50%.

**Table reproduced in full from Centers for Disease Control and Prevention. *Disinfecting wells following an emergency*. Centers for Disease Control and Prevention Web site. 2006. Available at http://www.bt.cdc.gov/disasters/pdf/wells_disinfect.pdf. Accessed November 11, 2007.

APPENDIX P

Refrigerator Temperature Monitoring Log⁷⁸

<u>Daily Refrigerator / Freezer Temperature Log</u>						
<p>Instructions: This log must be maintained for <u>all</u> refrigerators and freezers (both walk-in and reach-in units) in the facility. A designated food service employee should record the time, air temperature, and their initials each day. It is not necessary to check temperatures of food products but touch several products to be sure they are cold and frozen items are solid to the touch. The food service supervisor for each facility will verify that food service employees have taken the required temperatures by visually monitoring food service employees and reviewing, initialing, and dating a sample of logs each week. Maintain this log for a minimum of the duration of the center activation or until given permission to discard it. If corrective action is required on any day, circle the date in the first column and explain the action taken on the back of the chart or on an attached sheet of paper. Refrigerators should be between 2 and 8°C. Freezers should be between ≤ 20°C.</p> <p>Month: _____ Year: _____</p>						
Date	Refrigerator #1	Refrigerator #2		Freezer #1	Freezer #2	Employee's Initials
1						
2						
3						
4						
5						
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Temperature log modified from: Kansas State Department of Education (2008).⁷⁸

APPENDIX Q

Disposal of Waste Generated in an Ambulatory Care Center during Disasters

Adapted from University of Virginia Health System Checklist*

All Regulated Medical Waste (RMW) should be placed in a red bag or container or the bag/container should be labeled as RMW.

Type of Waste	Disposal Method
Sharps: Needles, lancets, staples, intravenous catheters, protected sharps, syringes with or without attached needles, scissors, blood vials, etc.	Sharps container
Non-sharps material or devices (i.e., bandages, swabs, or gauze): saturated or caked with blood/body fluids that would release blood/body fluid in a liquid or semiliquid state if compressed, or would flake if handled.	Red bag container
Specimens of blood, body fluids, and their containers	Red bag container
Urinary catheters/bags with blood	Red bag container
Typical consumer waste (food packaging, clothing, paper products, cot/mattress)	Regular trash can
Used personal hygiene products: facial tissues, diapers, blue pads, facial tissues, sanitary napkins, tampons	Regular trash can
Non-sharps disposable surgical instruments and materials/devices <i>without blood contamination</i> (e.g., vaginal speculums)	Regular trash can
IV tubing and bags, <i>without blood or sharps</i>	Regular trash can
Emptied containers: urine or stool cups, Foley & ostomy bags, bedpans, urinals, emesis basins, suction canisters and tubing, etc.	Regular trash can
Gowns, gloves, masks unless covered with blood that would ooze or flake if compressed	Regular trash can
Isolation room waste*: <i>Not meeting other red bag criteria: see footnote</i>	Regular trash can
Liquid human waste: urine, sputum, blood, etc.	Toilet/dirty sink – not handwashing sink (use splash precautions)
<i>When in doubt about non-sharps contaminated waste, place it in the red bag container.</i>	

If there is no red bag container in the room, place red bag waste in a plastic bag and carry it to the red bag container, typically placed in the soiled utility room/area.

ALL waste from individuals suspected to have exposure or infection with bioterrorism agents should be managed as red bag waste.

*Isolation status **does not** affect Red Bag Waste protocol: regular trash from an isolation room is still regular trash, unless it involves feces from a patient experiencing gastroenteritis-like symptoms.

*Note: State disposal methods may vary.

APPENDIX R

Environmental Response Strategies for Floods and/or Sewage Spills or Malfunctions Checklist⁸⁰

- Patient(s), staff, and supplies are moved out of the area
- Traffic is redirected away from the area, making it a restricted area
- Door(s) are closed or there is a barrier (such as plastic sheeting or tall screen) to isolate the area prior to clean up
- The flood or sewage spill is stopped or mitigated, if possible
- The source of the flood (from a clean or contaminated source) is determined. (A clean source would be a water pipe; contaminated sources include sewage pipes, flood due to rain, or water/liquid from unknown sources. When in doubt, consider the flood to be from a contaminated source.)
- All furniture from the flooded area is cleaned/disinfected prior to cleaning/disinfecting floors and/or walls
 - Furniture may be returned after cleaning/disinfection if it can be placed on blocks until surfaces dry
 - Chair mats and furniture that cannot be placed on blocks should remain out of the area until the floor is dry
- Sewage and other solids in the floodwater are removed, then surface water is drained/removed, and then let dry
- Water/fluid is extracted from all carpets and surfaces

Cleaning and Disinfecting Surfaces

- Hard environmental surfaces (e.g., floors, countertops, etc.) are cleaned with EPA-registered disinfectant after the area has been drained/dried
- Carpet is cleaned/disinfected with a carpet cleaner using cleaning solution (use manufacturer's recommendations for disinfectant dilution), then liquid is extracted from carpet. Next, the carpet is shampooed.
 - Remove and replace carpeting if it cannot be dried within 72 hours. Allow the underlying structure (i.e., carpet padding, floor, or subfloor) to dry before installing new carpeting; if the carpet padding cannot be dried within 72 hours, it should be removed and replaced
- Loose tiles or buckled flooring are removed when feasible and allowed to dry before replacing the item
- Wallboard, wallpaper, and/or other porous structural materials are removed and replaced if it cannot be cleaned/disinfected and dried within 72 hours*

- Metal or plastic furniture is cleaned with soap and water then disinfected using EPA-registered disinfectant and allowed to dry
- Cloth furniture has water extracted, then evaluate using moisture meter to see if repair and/or replacement are needed*
- Wood furniture is dried and then evaluated using moisture meter to see if repair and/or replacement are needed*
- Cloth partition panels, curtains, and other cloth/woven items are evaluated for extent of damage and ability to be cleaned, disinfected, and dried; replace if cleaning/disinfection is not feasible due to extensive damage
- Electrical equipment that cannot be easily dismantled, cleaned, and reassembled is replaced

Final Inspection

- A final inspection is conducted before an area is reopened to ensure that no moisture remains and no mold is present
 - Final inspection is conducted by a multidisciplinary group, including the infection preventionist/designee, facilities engineering professional, administrator, etc.
- Facilities engineering personnel is consulted if mold is present
- Mold is remediated before the area can be reopened

*Moisture meter readings should be $\leq 20\%$ moisture content.

Adapted from: Faeurbach L. Table 4-5. ICRA activities for floods, sewage, spills, and malfunction. In: Arias KM, Soule BM, eds. *The APIC/JCR Infection Control Workbook*. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2006; Chapter 4.⁸⁰ Used with permission.

APPENDIX S

List of Infection Prevention Physical Plant Issues^{81*}

Sufficient toilet facilities

HVAC system

- Have on hand or develop a floor plan indicating rooms/areas served by each air handler and by each ventilation exhaust fan

Triage area/space that allows adequate separation between sick and well individuals

Area/room(s) that can be converted to isolation room(s)/space

- Identify existing airborne infection isolation room (AIIR) or negative airflow environments and determine capacity
 - Develop a schematic for each air handling unit/system showing airflow to each room, return airflow, associated exhaust system, and any recirculation pattern
 - Consider buying portable HEPA filter units for creation of protective environments

Determine patient, visitor, medical supply, and waste flow/transportation patterns that decrease the risk of infection transmission

Patient decontamination area, if appropriate to the ACC

Separate clean and dirty utility rooms/areas

- Have designated area for regular trash and biohazard waste storage

Area for specimen handling/processing

Food preparation area

Room/area for reprocessing or sterilization of medical equipment/supplies

Refrigeration for medication or vaccine storage

Clean water for handwashing, processing medical equipment, etc.

Adequate sinks for handwashing

Mortuary holding area/postmortem care area

* Adapted from: Carrico R, Rebmann T. Planning for and managing infectious disease emergencies. In: Arias KM, Soule BM, eds. *The APIC/JCR Infection Control Workbook*, 2nd ed. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc., 2010; Chapter 5.

APPENDIX T

Disinfection and Sterilization Table⁴⁹

From: Rutala WA, Weber DJ, and the Healthcare Infection Control Practices Advisory Committee (HICPAC). Guidelines for disinfection and sterilization in healthcare facilities. Centers for Disease Control and Prevention Web site. 2008. Available at: http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Disinfection_Nov_2008.pdf. Accessed December 5, 2008.

Table 21-1. Methods for disinfection and sterilization of patient-care items and environmental surfaces*

Process	Level of Microbial Inactivation	Method	Examples (with processing times)	Healthcare Application (examples)
Sterilization	Destroys all microorganisms, including bacterial spores	High temperature	Steam (~40 min), dry heat (1–6 hr depending on temperature)	Heat-tolerant critical (surgical instruments) and semicritical patient-care items
		Low temperature	Ethylene oxide gas (~15 hr), hydrogen peroxide gas plasma (~50 min)	Heat-sensitive critical and semicritical patient-care items
		Liquid immersion	Chemical sterilants ^b : >2% glut (~10 hr); 1.12% glut and 1.93% phenol (12 hr); 7.35% HP and 0.23% PA (3 hr); 7.5% HP (6 hr); 1.0% HP and 0.08% PA (8 hr); ≥0.2% PA (~50 min)	Heat-sensitive critical and semicritical patient-care items that can be immersed
High-level disinfection (HLD)	Destroys all microorganisms except high numbers of bacterial spores	Heat-automated	Pasteurization (~50 min)	Heat-sensitive semicritical items (respiratory therapy equipment)
		Liquid immersion	Chemical sterilants/HLDs ^b : >2% glut (20–45 min); 0.55% OPA (12 min); 1.12% glut and 1.93% phenol (20 min); 7.35% HP and 0.23% PA (15 min); 7.5% HP (30 min); 1.0% HP and 0.08% PA (25 min); 650–675 ppm chlorine (10 min)	Heat-sensitive semicritical items (GI endoscopes, bronchoscopes)
Intermediate-level disinfection	Destroys vegetative bacteria, mycobacteria, most viruses, most fungi but not bacterial spores	Liquid contact	EPA-registered hospital disinfectant with label claim regarding tuberculocidal activity (e.g., chlorine-based products, phenolics—exposure times at least 30–60 sec)	Noncritical patient care item (blood pressure cuff) or surface with visible blood
Low-level disinfection	Destroys vegetative bacteria, some fungi and viruses but not mycobacteria or spores	Liquid contact	EPA-registered hospital disinfectant with no tuberculocidal claim (e.g., chlorine-based products, phenolics, quaternary ammonium compounds—exposure times at least 30–60 sec) or 70–90% alcohol	Noncritical patient care item (blood pressure cuff) or surface (bedside table) with no visible blood

*Modified from ^{16,96}. Abbreviations: glut, glutaraldehyde; HP, hydrogen peroxide; PA, peracetic acid; OPA, ortho-phthalaldehyde; ppm, parts per million; EPA, Environmental Protection Agency; FDA, Food and Drug Administration; GI, gastrointestinal.

^bConsult the FDA-cleared package insert for information about the cleared contact time and temperature, and see text for discussion why one product is used at a reduced exposure time (2% glutaraldehyde at 20 min, 20°C). Increasing the temperature using an automated endoscope reprocessor (AER) will reduce the contact time (e.g., OPA 12 min at 20°C but 5 min at 25°C in AER). Tubing must be completely filled for high-level disinfection and liquid chemical sterilization. Material compatibility should be investigated when appropriate (e.g., HP and HP with PA will cause functional damage to endoscopes).

From: Rutala WA, Weber DJ, and the Healthcare Infection Control Practices Advisory Committee (HICPAC). Guidelines for disinfection and sterilization in healthcare facilities. Centers for Disease Control and Prevention Web site. 2008. Available at: http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Disinfection_Nov_2008.pdf. Accessed December 5, 2008.

APPENDIX U

Central Line–associated Bloodstream Infection Prevention⁵⁷

The following interventions are recommended to prevent central line–associated bloodstream infections.

At/during insertion of a central line:

- Use a catheter insertion checklist to ensure adherence to infection prevention practices at the time of central venous catheter insertion
- Perform hand hygiene before catheter insertion or manipulation
- Site selection:
 - Adults: Choose the subclavian sites for insertion
 - If the subclavian vein is not feasible, use the internal jugular vein; avoid using the femoral vein
 - Pediatric patients: Site selection depends on the size and condition of the child or infant
- Use an all-inclusive catheter cart or kit
- All healthcare personnel participating in catheter insertion should use maximal sterile barrier precautions during central venous catheter insertion
 - Maximal sterile barrier precautions consist of a surgical mask, cap/hair covering, sterile gown, and sterile gloves
- Cover the patient with a head-to-toe sterile drape (with an opening for the catheter insertion) during catheter insertion
- Use a chlorhexidine-based antiseptic for skin preparation in patients older than 2 months of age, unless contraindicated

After insertion/access/maintenance of a central line

- Perform hand hygiene before and after manipulation central lines or insertion sites
- Disinfect catheter hubs, needleless connectors, and injection ports before accessing the catheter
- Assess the patient for continual need for the catheter; remove nonessential catheters as soon as possible
- Use antimicrobial ointment for hemodialysis catheter insertion sites (see Dialysis section)

APPENDIX V

Catheter-related Urinary Tract Infection Prevention^{58,59}

The following interventions are recommended to prevent catheter-related urinary tract infections:

- Use urinary catheters only when necessary
 - Use condom or intermittent catheterization when feasible rather than indwelling urinary catheters
- Perform hand hygiene before and after inserting or manipulating a patient's urinary catheter or urine collection system
- Use aseptic technique when inserting urinary catheters
- Assess the patient for the need for the urinary catheter; remove unnecessary catheters as soon as possible
- Obtain a urine culture before initiation of antimicrobial therapy for suspected urinary tract infection
- Indwelling catheter drainage systems should remain closed

APPENDIX W

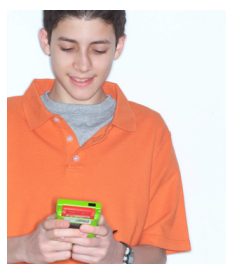
Toys in an ACC

Toy Alert

Sharing Toys Can Spread Germs

To Reduce the chances of your child becoming ill:

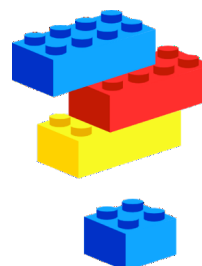
Clean toys before and after your child enjoys them. Ask a staff member for guidance.



Handheld electronics



Planes, cars, trucks, etc.



Plastic blocks

You may choose to avoid certain toys that cannot be cleaned
Toys you may have difficulty cleaning:



Crayons



Soft/cloth



Books or magazines



Wooden

Avoid sharing toys that cannot be cleaned

Help your child clean their hands before and after playing with toys



Wash with soap and water



Use alcohol-based hand rub

APPENDIX X

List of ACC Workers Requiring Infection Prevention Education⁸²

Healthcare Groups

- Nurses and nursing students
- Physicians and medical students
- Patient care technicians/assistants
- Physical and occupational therapists
- Pharmacists
- Laboratory personnel
- Mental health practitioners
- Medical examiners/morgue employees

Nonclinical healthcare workers

- Sterile processing staff
- Support staff (e.g., food services, etc.)
- Clergy
- Patient transporters
- Housekeepers/environmental services
- Facilities/maintenance
- Health educators
- Administrators
- Safety/security
- Medical records
- Risk management
- Volunteers

*Table adapted from: Rebmann T. APIC State-of-the-Art report: The role of the infection preventionist in emergency management. *Am J Infect Control* 2009;37:271-281.

APPENDIX Y

List of Infection Prevention Education/Training Topics^{82*}

- Screening/triaging procedures
- Patient management (patient discharge instructions, when to isolate, etc.)
- Infection prevention strategies related to dialysis, surgery, or other invasive medical procedures
- Location of infection prevention supplies and proper procedures for their use
- Event or disease-specific information
- Self-screening and reporting of symptoms
- Exposure management
- Isolation and quarantine procedures
- PPE use and reuse
- Procedures for obtaining and handling patient specimens safely
- Hand hygiene
- Respiratory etiquette
- Safe handling of food, water, and medications/vaccines
- Cleaning, disinfecting, and sterilizing medical equipment
- Cleaning and disinfection of ACC shared/communal toys
- Waste management
- Pest and animal management
- Postmortem care
- Patient decontamination[§]

[§]If patient decontamination is to be performed at the ACC.

*Table adapted from: Rebmann, T. APIC State-of-the-Art report: The role of the infection preventionist in emergency management. *Am J Infect Control* 2009;37:271-281.