Evidence-Based Best Practices: Infection Prevention and Control

Infection Preventionist

The facility's designated Infection Preventionist (IP) is responsible for coordinating all infection prevention and control program (IPC) activities, and must have a basic knowledge of:

- Care practices
- Infectious diseases, epidemiology, and surveillance practices
- Current immunization guidelines
- Cleaning, disinfection, and sterilization processes
- Adult education and communication methods

The IP should complete a basic IPC training course and have access to continuing education programs to advance his/her knowledge in IPC. Training is available from a number of organizations, including this Infection Prevention Training from the Centers for Disease Control and Prevention (CDC).

Infection Control Committee

A multidisciplinary Infection Control Committee is a key element of an IPC program. The committee should:

- Provide input on facility-wide IPC policies and procedures, and surveillance processes
- Evaluate data obtained through surveillance
- Meet on a regular basis, at least quarterly or more frequently as necessary
- Include, at a minimum, the IP, facility Medical Director, nursing and administrative staff members, as well as representatives from dietary, housekeeping and maintenance
- Include the pharmacy consultant on an as needed basis

Policies and Procedures

Evidence-based policies and procedures are the foundation of a facility's infection control and prevention program. Specific policies and procedures should include, but are not limited to:

- Roles and responsibilities of facility staff, including the IP
- Training of staff and volunteers, as well as processes for monitoring competency
- Identification and management of outbreaks of communicable diseases, including reporting to state or local authorities as required by statute
- Use of standard precautions, including hand hygiene and use of alcohol-based hand sanitizer
- Parameters for implementing and discontinuing transmission-based precautions, including the use of personal protective equipment
- Parameters for implementing and discontinuing enhanced barrier precautions
- Environmental cleaning and disinfection, including terminal cleaning procedures when transmission-based precautions are discontinued
- Handling and disposal of biohazard waste and single use equipment
- Disinfecting multiple use equipment and supplies, such as blood glucose monitors, stethoscopes, and pulse oximetry units
- Handling of soiled linen, including linen from isolation areas
- Collection and handling of laboratory specimens
- Management of exposures to blood-borne pathogens, such as needlesticks
- Kitchen sanitation and safe food handling
- Immunization programs for people living in the facility and staff
- Planning for internal and external disaster situations, including public health emergencies (such as the COVID-19 pandemic)

Surveillance

Essential elements of a surveillance system include:

- Use of standardized definitions and listings of symptoms of infections
- Use of surveillance tools such as infections surveys, data collection templates, walking rounds throughout the facility
- Identifying segments of the population at risk for infection
- Determining the processes or outcomes to be selected for surveillance
- Conducting an analysis of the data collected
- Sharing surveillance findings with facility staff

There are different types of surveillance activities, and the facility may choose to use more than one type depending on its specific needs and circumstances.

Staff Training and Competency Evaluation

The facility should commit openly to staff education and identify methods for delivery. Essential conditions for training include:

- Availability of infection control expertise
- Appropriate facilities
- Dedicated budget and time during working hours

Specific content should include:

- Definitions, impacts and burdens of health care-associated infections (HAI), including multi-drug resistant organisms
- Chain of infections and methods of transmission
- Occupational Safety and Health Administration (OSHA) bloodborne pathogen standards, safe injection practices
- OSHA respiratory protection standards and the facility's respiratory protection plan
- Standard, transmission-based, and enhanced barrier precautions
- Respiratory hygiene and cough etiquette
- Proper use of personal protective equipment (PPE), including proper donning and doffing of PPE
- Hand hygiene, including proper use of alcohol-based hand rub (ABHR)
- Proper handling of clean and soiled linens
- Proper cleaning and disinfection of multi-person use equipment, such as blood pressure machines or stethoscopes
- Employee health issues and concerns, such as immunizations, work exclusions, and reporting exposure to or infection with a communicable disease

Ongoing training is necessary to ensure all staff are familiar with the IPC policies and procedures, including:

- Formal education, such as in-services at least annually
- Face-to-face mentoring based on direct observations, staff self-assessments, facility IPC risk assessments, and surveillance findings

Facilities should have processes in place to monitor adherence to facility policies and procedures, and to test staff competency on a periodic basis.

Medical Devices

The use of medical devices on more than one person increased the risk for infections. Devices such as blood glucose monitors, blood pressure cuffs, electronic

thermometers, stethoscopes are all devices that have the potential to spread infection from one person to another.

Blood glucose monitors should be cleaned according to the manufacturer's instructions.

- Do not use fingerstick devices (lancets), insulin pens and syringes for more than one person.
- The facility should not use the same blood glucose monitor with multiple people.
- If a blood glucose monitor needs to be used by multiple residents, it must be thoroughly cleaned and disinfected after each use and between every person.
- Store blood glucose monitors properly to prevent cross-contamination or the accidental use with more than one person.

Blood pressure cuffs must be cleaned with a disinfectant wipe between each use.

- Make sure the cuff stays wet for the appropriate contact time, then allow the cuff to air dry after cleaning.
- Use a fresh wipe each time the cuff is cleaned.
- Wipe down the entire cuff, including the hose that extends from the cuff to the blood pressure machine.
- Disposable cuffs should be used whenever possible.
- A dedicated blood pressure cuff must be used for anyone on transmission-based precautions and used only for that person for the duration of isolation.

Stethoscopes should be cleaned and disinfected according to the manufacturer's recommendations. The entire stethoscope should be cleaned and disinfected, including the earpieces.

- Allow the stethoscope to dry before the next use.
- Whenever possible, use a disposable stethoscope for people on transmission-based precautions. If disposable stethoscopes are not available, ensure there is a dedicated stethoscope to be used only for that person for the duration of the isolation.

Pulse Oximetry devices must be disinfected between each use, especially if it is used for more than one person.

- Follow the manufacturer's instructions for cleaning and disinfection.
- If no instructions are given, wipe the surface and the rubber touching the finger inside the device with a 70% isopropyl alcohol solution and allow to air dry.

Employee Health

The NF must place a major emphasis on promoting the health and well-being of all its employees, including:

- Developing and implementing procedures for staff who are exposed to or diagnosed with communicable diseases
- Developing and implementing procedures for job-related injuries with exposure to blood or body fluids, such as needlesticks, sharps, contact via mucous membranes or contact with non-intact skin
- Developing an immunization program, consistent with the current adult immunization guidelines from the CDC

Tuberculosis Screening

The facility's policies and procedures for Tuberculosis (TB) screening need to be consistent with current recommendations from the CDC and the Texas Department of State Health Services (DSHS).

Staff Screening

Baseline screening and testing should be completed before or at the time of employment, including:

- Individual risk assessment
- Symptom evaluation
- TB testing
- Additional work up if test results are positive or symptoms are present

Baseline TB screening and testing should be completed using either an interferon-gamma release assay (IGRA) blood test or a two-step tuberculin skin test (TST). Routine annual testing (whether by TST or IGRA) is **not** recommended unless there is known exposure or ongoing transmission of TB at the facility.

NFs should provide annual training on TB, including:

- Risk factors for developing TB
- Signs and symptoms of TB
- Infection prevention and control policies and procedures related to TB

Employees must report any potential TB exposure to their primary care physician/designee and the designated contact at the NF. The decision to conduct additional TB testing should be based on the employee's risk for TB exposure since the last test.

HHSC Provider Letter 20-25 provides additional information about TB screening, testing and treatment of healthcare workers.

People Living in the Facility
Everyone must be screened for TB infection on admission. Skin tests should be administered to anyone being admitted to the NF unless they have documentation of a previous positive reaction. The two-step TST (see above) is most often used for the initial testing, but an IGRA blood test could be used as well.

Each tuberculin-positive person should be evaluated annually, and a record should be kept that documents the presence or absence of symptoms of TB (e.g., weight loss, cough, fever). Instead of participating in serial testing or chest x-rays, they should receive the symptom screen annually. Repeat skin tests should be provided for people who are tuberculin-negative after any suspected exposure to a documented case of active infectious tuberculosis.

Treating Latent TB Infection
Latent TB infection (LTBI) occurs when a person is infected with the bacteria that causes tuberculosis but does not have symptoms of the disease. Often, the only sign of LTBI is a positive skin test. People with LTBI are not infectious and cannot spread the disease to others, however they should be treated to prevent TB disease. Treatment recommendations are available on the CDC website.

Immunization Programs

Immunization programs protect people living in the NF and staff from infectious diseases for which there are recommended vaccines.

- Everyone aged 6 months or older should receive an annual influenza vaccination, unless a medical contraindication is present.
- Anyone living in the facility should receive the pneumococcal vaccination, according to current CDC recommendations.
- Staff members without documented evidence of a completed series of Hepatitis B vaccine, or who have no serologic evidence of immunity should be vaccinated.
- COVID-19 vaccination should be given according to current CDC recommendations
- Staff members who have not had Chickenpox in the past, have not previously received the varicella vaccine, or who have no serologic evidence of immunity should receive the varicella vaccine.
- MMR should be given if the person was born in 1957 or later and has not received the MMR, or if there is no serologic evidence of immunity.

- One dose of Tdap should be given if never received previously. Td boosters should be given every 10 years thereafter.
- Anyone aged 50 or older should receive the Herpes Zoster (shingles) vaccine.

Staff members should be referred to their physician or other community resources for the Varicella, MMR and Tdap vaccines.

Antimicrobial Stewardship

Antimicrobial resistance is a serious public health threat. Antimicrobial stewardship (AS) interventions have been proven to improve outcomes, reduce the overall burden of antimicrobial resistance and save healthcare dollars. When implementing an AS program, NFs should:

- Have clear policies and practices that ensure antibiotics are not started unless they are medically necessary
- Review the facility's microbiology reports and antibiogram to detect trends in antibiotic resistance
- Implement policies that encourage best practices for antibiotic prescribing, including establishing minimum criteria for prescribing antibiotics
- Review antibiotic appropriateness and resistance patterns
- Implement nursing protocols for monitoring a person's status for evolving conditions if there is no specific indication for antibiotics
- Obtain microbiology cultures before starting antibiotics whenever possible and adjust or discontinue antibiotics when appropriate
- Treat with antibiotics only when appropriate, when the most likely cause of the person's symptoms is a bacterial infection
- Use antibiotics only for as long as necessary to treat infections, minimize risk or relapse or control active risk to others
- Ensure antibiotics are generally not used to treat colonization.
- Avoid use of antibiotics to treat viral illnesses such as cold, influenza and viral gastroenteritis
- Engage people living in the facility and their family members in addressing the need to improve antibiotic use in the facility

Resources that can help in developing an effective AS program are available from the CDC and the Agency for Healthcare Research and Quality (AHRQ).

Food Service/Kitchen Sanitation

Unsafe food handling practices can increase the risk of for pathogen exposure to residents. Sanitary conditions must be present to promote safe food handling.

Categories of food contamination include:

- Biological – involving pathogens such as bacteria, viruses, toxins and spores Chemical – from cleaning supplies or other common chemical used by staff
- Physical – contamination from foreign objects such as fingernails, hair and metal shavings

Tips for preventing foodborne illnesses include:

- Maintain proper handling and storage of food items/ingredients
- Maintain proper holding temperatures for hot (above 140°F) and cold foods (below 40° F), including between meal and bedtime snacks
- Exclude employees from work if they have a communicable disease
- Make sure employees cover all cuts and burns with a bandage or use a finger cot
- Follow hand hygiene guidelines, use gloves when indicated and wash hands prior to donning a new pair of gloves
- Wear hair restraints (including beard covers), avoid jewelry and keep nails short, clean, and neat – no nail polish or artificial nails
- Store chemical products, including cleaning supplies, separately from food items

Multi-Drug Resistant Organisms

Multi-drug resistant organisms (MDROs) are microorganisms, usually bacteria, that are resistant to one or more classes of antimicrobial agents. Common MDROs include:

- Methicillin-resistant *Staphylococcus aureus* (MRSA)
- Vancomycin-resistant Enterococci (VRE)
- Carbapenem-resistant Enterobacteriaceae (CRE)
- Extended Spectrum Beta Lactamase Producers (ESBLs)

Enhanced Barrier Precautions

First introduced in 2019 and updated in 2022, enhanced barrier precautions (EBP) fall between standard and contact precautions and are intended to help manage the spread of MDROs in NFs. EBPs do not replace existing CDC guidance for the use of contact precautions when appropriate (such as for *C. difficile* or norovirus).

EBPs include wearing appropriate PPE (including face protection if splash/spray is possible) when conducting high-contact care to people who are infected or colonized with a novel or targeted MDRO:

- Pan-resistant organisms*
- Carbapenemase-producing *Enterobacterales*

- Carbapenemase-producing *Pseudomonas* species
- Carbapenemase-producing *Acinetobacter baumannii*
- *Candida auris*

*The CDC defines pan-resistant organisms as those *"for which **no** current treatment options exist."*

Other MDROs that could be considered when determining whether to implement EBP include:

- MRSA
- ESBLs
- VRE
- Multi-drug resistant *Pseudomonas aeruginosa*
- Drug-resistant *Streptococcus pneumoniae*

EBPs also apply for people with wounds or medical devices (such as an indwelling bladder catheter, central line, tracheostomy, or feeding tube) whether they are colonized with an MDRO or not. When implementing enhanced barrier precautions:

- Ensure appropriate signage is posted on the door or wall outside the room.
  - The specific type of precautions and what PPE is required
  - The type of care activities that would require the use of gloves and gowns
- Make sure the appropriate PPE is available outside the person's room.
- Make sure there is access to ABHR in every room (preferably inside and outside the room).
- Have a trash can inside the room but near the door so PPE can be discarded once removed. PPE must be doffed before leaving the room or providing care for another person in the same room.
- Implement processes for monitoring compliance to determine the need for additional training.
- Make sure education is also provided to the people living in the NF and their visitors.

Examples of high-contact care include:

- Bathing, showering, providing hygiene
- Dressing, changing linens
- Changing incontinent briefs or assisting a person with toileting
- Medical device care – central lines, indwelling bladder catheters, feeding tubes, tracheostomy or ventilator care
- Wound care for any wound that requires a dressing

Note: Implementing EBPs does not mean a person must remain in their room or cannot participate in activities programs.

If EBPs are implemented due to the presence of a medical device or an open wound, the precautions may be discontinued once the wound has resolved, or the device is removed. In other situations, however, once EBPs have been implemented, they will generally remain in place as long as the person resides in the NF.

Contact Precautions

If a person living in the NF is infected with an MDRO, contact precautions should be implemented until the person is treated and tests negative for the particular organism. This includes:

- Wearing gloves at all times when caring for the person or touching the person's belongings
- Wearing a gown when entering the room
- Performing hand hygiene after any contact with the person, and when gown/gloves are removed
- Removing PPE prior to exiting the person's room

Dedicated equipment (such as blood pressure machines, stethoscope, etc.) if preferred, and should remain in the person's room while contact precautions are in place. Any equipment that cannot be dedicated to one specific person **must** be properly cleaned and disinfected after each use.

Clostridioides difficile

Clostridioides difficile (C. diff) is a bacterium that can cause multiple and sometimes severe symptoms in people who have been on prolonged courses of antibiotics. It is commonly spread by person-to-person contact, so any person diagnosed with *C. diff* should be placed on contact precautions, including:

- Proper hand hygiene
- Use of personal protective equipment as necessary
- Disinfection of resident rooms and equipment thoroughly with a bleach/water solution

Antimicrobial stewardship is an important measure in preventing *C. diff* infections; antibiotics should be used only when medically necessary.

Staff and people living in the NF/families should be educated about the ways *C. diff* can be transmitted and the use of contact precautions.

Coronavirus Disease 2019 (COVID-19)

COVID-19 is a severe respiratory illness caused by a novel coronavirus, specifically Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Older adults and people with chronic medical conditions (including those living in NFs) are at higher risk for severe disease and make up a significant proportion of fatalities related to COVID-19.

NFs must have a plan to prevent transmission of COVID-19 and managing any outbreaks. This includes policies and procedures for testing, treatment, cohorting when necessary, cleaning and disinfecting environmental surfaces, and more.

Helpful resources for developing a COVID-19 plan include:

- Texas Health and Human Services (HHS): Coronavirus (COVID-19) Provider Information
- DSHS: COVID-19 (Coronavirus Disease 2019)
- CDC: Interim Infection Prevention and Control Recommendations for Healthcare Personnel during the Coronavirus Disease 2019 (COVID-19) Pandemic
- CDC: COVID-19 Vaccines for Long-Term Care Residents
- CDC: NHSN LTCF COVID-19 Module
- United States Environmental Protection Agency (EPA): List N – Disinfectants for Coronavirus

References

Centers for Disease Control and Prevention
AMDA: The Society for Post-Acute and Long-Term Care Medicine
APIC: The Association for Professionals in Infection Control and Epidemiology