

EVENTS RELATED TO INFECTION

Prevention of all types of infections

Foundational and Ongoing Education Topics to Consider

- Educate staff on infection prevention policies and test for competency, including, but not limited to:
 - o Standard precautions (i.e., hand hygiene, proper selection and use of personal protective equipment, safe injection practices, respiratory hygiene/cough etiquette, environmental cleaning and disinfection, and reprocessing of reusable medical equipment)
 - o Transmission-based precautions.
 - o Antibiotic stewardship.
 - Educate clinicians about resistance and optimal prescribing.
 - o Causes, risks, assessment, treatment, and prevention of:
 - Pneumonia/upper respiratory infections.
 - Aspiration.
 - Non-catheter and catheter-associated urinary tract infections.
 - Surgical site assessment and wound care.
 - *Clostridium difficile* infection prevention and management.
- Preventing transmission of infections from healthcare workers to residents through occupational health policies that include but are not limited to influenza immunization and following work restrictions when ill.
- Educate residents and family on infection prevention and control (e.g., refrain from visiting when ill, hand hygiene).

Pre-Admission Practices

- Assess for any current infections and how they are being managed/treated.
- Review the type of antibiotics being used, the route they are being administered, how long they have been used, and when the stop date is.
- Obtain any recent or pending laboratory (e.g., culture) or radiology results. If the results are not yet available, establish a process to obtain and review the results.
- Notify the infection preventionist and enter applicable information in the facility infection surveillance and tracking system.
- Ensure appropriate room placement of resident, providing resident requiring transmission-based precautions with a single room when possible, and using evidence-based guidelines for making decisions about resident placement.
- Ensure appropriate equipment is available and set up prior to admission (e.g., personal protective equipment- gloves, gown, facemask and dedicated medical equipment).

Admission Practices

- Review any antibiotic use for appropriateness. Review with physician/practitioner and/or pharmacist as needed. Establish a plan for an antibiotic time-out, reassessment of antibiotic, stop date of antibiotic.
- Review cultures for final result and ensure the culture result will be obtained if the final result is not available yet.
- Assess need for and appropriately provide seasonal influenza vaccine and pneumococcal vaccine (use standing orders for assessment and administration of these vaccines).

- Notify the infection preventionist if not already done, and enter additional applicable information in the facility infection surveillance and tracking system (e.g., track which residents have infections, signs and symptoms of infection, any transmission based precautions, lab/culture results, antibiotics prescribed, time-out or reassessment of antibiotic, stop date of antibiotic).
- Ensure appropriate room placement of resident, providing resident requiring transmission-precautions in a single room when possible, and using evidence-based guidelines for making decisions about resident placement and duration of precautions.
- Ensure all equipment (e.g., personal protective equipment and dedicated medical equipment such as blood pressure cuff) and signage are in place.
- Communicate clearly with healthcare providers, caregivers, residents, and families about policies and provide clear documentation of rationale for why transmission-based precautions are initiated and when and why they will be discontinued.
- At daily stand up/IDT meeting review new resident's infections, antibiotic use/treatment plan, precautions to prevent spread.
- Add infections, antibiotic use, precautions and interventions to the 24-hour report and ensure this information is reviewed with all staff at shift change (appropriate staff and IDT team members should review 24-hour reports back to the last day worked in order to ensure they are aware of changes).
- Review the plan of care with the resident (and family as applicable) so that they know what to expect and can help monitor consistent implementation of the plan of care.

Ongoing Care Practices and Monitoring

- Develop and implement organizational evidence-based infection prevention and control policies.
- Use 'care paths' or decision tools to guide nurses in monitoring signs and symptoms of infection (such as for symptoms of UTI or respiratory infections) and for contacting the provider with specific information to aid the provider in determining appropriate tests, diagnosis, and management.
 - Use standardized communication tools (e.g., SBAR) to communicate information to the physician
- Use criteria/guidelines to support physician/practitioner diagnosis of infection and initiation of antibiotics.
- With any new/suspicion of infection:
 - Ensure infection prevention and control nurse notified and involved.
 - Notify resident and family members of infection, treatment plan, and transmission-based precautions (if necessary).
 - Ensure appropriate radiology/labs/culture obtained to confirm infection. Ensure final result is obtained.
 - Ensure appropriate initiation of antibiotics (e.g., standardized criteria for infection is met).
 - Ensure appropriate room and roommate.
 - Ensure appropriate signage, equipment, and supplies are available.
 - Update the plan of care and nursing assistant assignment sheet with any interventions.
 - At daily stand up/IDT meeting review new infections, antibiotic use, precautions, and interventions.
 - Add infections, antibiotic use, precautions and interventions to the 24-hour report and ensure this information is reviewed with all staff at shift change (appropriate staff and IDT team members should review 24-hour reports back to the last day worked in order to ensure they are aware of changes).
 - Enter applicable information in the facility's surveillance plan and tracking program (e.g., track which residents have infections, signs and symptoms of infection, any transmission based precautions, lab/culture results, antibiotics prescribed, time-out or reassessment of antibiotic, stop date of antibiotic).

- Make soap and water and alcohol-based hand sanitizers readily available throughout the facility to support expectations with hand hygiene for staff, residents, and families.
- Ensure handling of linens to avoid contamination of air, surfaces, and persons (e.g., do not carry dirty linens down hallways – have bins to collect linens in the room when indicated).
- Ensure that reusable equipment is not used for the care of another resident until it has been appropriately cleaned and disinfected and that single-use items are properly discarded.
- Use floor, counter, and furniture surfaces that can be thoroughly cleaned. Follow established protocol for cleaning procedures (e.g., clean and disinfect high touch surfaces in rooms of residents on transmission-based precautions on a daily basis).
- Conduct audits on practices of hand hygiene, use of gloves, and other personal protective equipment (including donning and doffing), and environmental and equipment cleaning and disinfection. Define other practices that will be audited (e.g., point of care testing, urinary catheter maintenance, wound care, central venous catheter maintenance). Provide results of audits to staff.
- Map out infections in the building, current and over time to observe for trends, containment or spread, and to assist in decision making for potential resident placement.
 - Use color coding or other indicators for easy visualization of the types and locations of infections that residents have.
- Ensure residents are placed in appropriate rooms. In general, it is best to place residents requiring transmission-based precautions in a single room. Use guidelines for making decisions about resident placement.
- Group activities – maintain each resident’s ability to socialize and have access to rehabilitation opportunities, following guidelines for when temporary transmission-based precautions are necessary, and when residents may be allowed to be in common areas and to participate in group meals or activities.
- Implement antibiotic stewardship. Follow CDC protocols for antibiotic stewardship in LTC.
 - Leadership Commitment: Dedicating necessary human, financial, and information technology resources
 - Accountability: Appointing a single leader responsible for program outcomes. Experience with successful antibiotic stewardship programs show that a physician leader is effective.
 - Drug Expertise: Appointing a single pharmacist leader responsible for working to improve antibiotic use.
 - Action: Implementing at least one recommended action, such as systemic evaluation of ongoing treatment need after a set period of initial treatment (i.e. “antibiotic time out” after 48 hours).
 - Tracking: Monitoring antibiotic prescribing and resistance patterns.
 - Reporting: Regular reporting information on antibiotic use and resistance to doctors, nurses and relevant staff.
 - Education: Educating clinicians about resistance and optimal prescribing.

Resources to Consider

- Agency for Healthcare Research and Quality (AHRQ), Antibiotic use protocols, policies and practices - <http://www.ahrq.gov/nhguide/index.html>
- CDC, Clostridium *difficile* infection prevention - https://www.cdc.gov/hai/organisms/cdiff/Cdiff_settings.html
- CDC, The Core Elements of Antibiotic Stewardship for Nursing Homes - <http://www.cdc.gov/longtermcare/index.html>
- CDC, Guideline for Disinfection and Sterilization in Healthcare Facilities - https://www.cdc.gov/hicpac/pdf/guidelines/Disinfection_Nov_2008.pdf
- CDC, Guidelines for Environmental Infection Control in Health-Care Facilities, Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC) - <https://www.cdc.gov/infectioncontrol/pdf/guidelines/environmental-guidelines.pdf>

- CDC, Guideline for Prevention of Catheter-Associated Urinary Tract Infections - <https://www.cdc.gov/infectioncontrol/guidelines/cauti/index.html>
- CDC, Guideline for Preventing Healthcare Associated Pneumonia - <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5303a1.htm>
- CDC, Hand Hygiene in Healthcare Settings - <https://www.cdc.gov/handhygiene/index.html>
- CDC, Infection Prevention and Control Assessment Tool for Long-term Care Facilities - <https://www.cdc.gov/infectioncontrol/pdf/ICAR/LTCF.pdf>
- CDC, National Nursing Home Quality Improvement C. difficile Infection Prevention Assessment Checklists - <https://www.cdc.gov/longtermcare/prevention/index.html>
- CDC, Prevention Tools for Nursing Homes and Assisted Living - <https://www.cdc.gov/longtermcare/prevention/index.html>
- CMS, LTC Survey Pathway, Infection Prevention, Control & Immunizations - <https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/GuidanceforLawsAndRegulations/Nursing-Homes.html>
- CMS, LTC Survey Pathway, Urinary Catheter or Urinary Tract Infection - <https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/GuidanceforLawsAndRegulations/Nursing-Homes.html>
- CMS, State Operations Manual Appendix PP – Guidance to Surveyors for Long Term Care Facilities: §483.80 F880 Infection Control Regulation and Guidance - https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf
- QIO Program, Training resources on CDI prevention and management, and antibiotic stewardship - <https://qioprogram.org/nursing-home-training-sessions>
- Society for Healthcare Epidemiology of America (SHEA), Long Term Care resources - <https://www.shea-online.org/index.php/long-term-care>
- SHEA and APIC, Guideline: Infection prevention and control in the long-term care facility - http://www.apic.org/Resource_/TinyMceFileManager/Practice_Guidance/id_APIC-SHEA_GuidelineforICinLTCFs.pdf
- SHEA and CDC, Surveillance Definitions of Infections in Long-Term Care Facilities – <http://www.jstor.org/stable/10.1086/667743>
- Other articles:
 - Dubberke, E.R., and Gerding, D.N. (2011). 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: A fall 2011 update. <https://www.shea-online.org/images/patients/CDI-hand-hygiene-Update.pdf>
 - Siegel, J.D., Rhinehart, E., Jackson, M., Chiarello, L., and the Healthcare Infection Control Practices Advisory Committee. (2007). 2007 Guideline for isolation precautions: Preventing transmission of infectious agents in healthcare settings. Accessed on September 20, 2018 from <https://www.cdc.gov/infectioncontrol/guidelines/isolation/index.html>
 - Siegel, J.D., Rhinehart, E., Jackson, M., and Chiarello, L. (2006). Management of multidrug-resistant organisms in healthcare settings, 2006. Accessed on September 20, 2018 from <https://www.cdc.gov/hicpac/pdf/mdro/mdroguideline2006.pdf>
 - Loeb, M., et al. (2005). Effect of a multifaceted intervention on number of antimicrobial prescriptions for suspected urinary tract infections in residents of nursing homes: Cluster randomised controlled trial. *BMJ*, 331, 669. Accessed on September 20, 2018, from <http://www.bmj.com/content/bmj/early/2004/12/31/bmj.38602.586343.55.full.pdf>
- See [Appendix D](#) for suggestions on team members in your organization to include in quality improvement efforts for this topic.

Prevent aspiration pneumonia and other respiratory infections

See section titled “[Prevention of all types of infections](#)” for information on Foundational and Ongoing Education Topics to Consider, Pre-Admission Practices, Admission Practices, Ongoing Care Practices and Monitoring, and Resources to Consider. Additional information specific to aspiration pneumonia and other respiratory infections is below.

- Prior to admission, assess diagnosis or history of swallowing difficulties or aspiration and interventions needed to prevent aspiration.
- Assess each resident’s risk factors for aspiration due to dysphagia (e.g., stroke, Alzheimer’s disease, Parkinson’s disease, being less alert due to medicines, illness, coma, esophageal stricture, gastroesophageal reflux, drinking large amounts of alcohol, general anesthesia, age).
- Conduct a speech/language therapy evaluation for those at risk of aspiration (includes history, evaluation of strength/movement of muscles used in swallowing, observation of eating to see posture, behavior, and oral movements).
- Identify and implement precautions to take to reduce risk of aspiration.
 - o Recognize signs and symptoms of aspiration.
 - o Support good posture (e.g., sitting as upright as possible, not slumped or hunched over, head not tilted to the side, back, or front) when they are eating or drinking.
 - o Keep the head of the bed at or more than 45 degrees after a meal, if not contraindicated.
 - o Implement other treatments as ordered (e.g., exercises to improve muscle movement, other positions or strategies to help the resident swallow effectively, specific food and liquid textures that are easier and safer to swallow).
 - o Prevent aspiration during enteral feeding (e.g., head of bed elevated if not contraindicated, verify appropriate placement of feeding tube).
- Educate and ensure competency of staff on precautions, signs, and symptoms of aspiration
- Implement precautions to reduce pathogen count to reduce pneumonia risk.
 - o Provide or support residents to practice good oral care (morning and evening - brush before meals) to cut back on germs in saliva. Ensure nursing assistant (or other designated staff) have responsibility for oral care, are trained in providing it, and trained in responding to residents who might refuse oral care (e.g., try again after a bit). Implement consistent nursing assistant assignment so that staff are familiar with when and how residents prefer oral care.
 - o Provide dental services and care for residents.
- Educate and ensure competency of staff on precautions, signs, and symptoms of aspiration.
- Establish policies to prevent healthcare associated pneumonia (following guidelines such as those from the CDC).
- Assess residents need for the pneumococcal vaccination and administer as appropriate.

Prevent surgical site infection (SSI) associated with wound care

See section titled “[Prevention of all types of infections](#)” for information on Foundational and Ongoing Education Topics to Consider, Pre-Admission Practices, Admission Practices, Ongoing Care Practices and Monitoring, and Resources to Consider. Additional information specific to preventing surgical site infection associated with wound care is below.

- Prior to admission, assess need for topical management of surgical sites and wounds.
- Perform hand hygiene before touching the resident, before any clean/aseptic procedure including wound care, after body fluid exposure/risk, after touching the resident, and after touching resident surroundings.
- Conduct nursing assessment of surgical site, documenting and notifying clinician of details such as any area of redness or swelling, feeling hot to touch, drainage – type and amount, size of any open area.
- Use a tool to guide a thorough nursing assessment of the surgical site wound.

- Ensure suture removal date is identified, and who is responsible for removal.
- Conduct ongoing observation for fever, increased pain at surgical site.
- Support safe resident movement and exercise in order to avoid falls and potential wound dehiscence.

Prevent urinary tract infection associated with catheter (CAUTI)

See section titled "[Prevention of all types of infections](#)" for information on Foundational and Ongoing Education Topics to Consider, Pre-Admission Practices, Admission Practices, Ongoing Care Practices and Monitoring, and Resources to Consider. Additional information specific to preventing urinary tract infection associated with catheter is below.

- Follow guidelines for prevention of urinary tract infections associated with catheters (such as those available from the CDC - <https://www.cdc.gov/infectioncontrol/pdf/guidelines/cauti-guidelines.pdf>).
- Assess for current urinary catheter use preadmission - review indications, how long the catheter has been in place. If appropriate, coordinate removal prior to admission.
- For all residents admitted with a urinary catheter, assess the indications/need for catheter use.
- Discuss risks and benefits of catheter use with residents and families.
- Avoid all unnecessary use, including use of a urinary catheter as a way to:
 - o Measure urine output when other options are available (alternative methods to consider: urinals, collection devices in the toilet/commode).
 - o Manage incontinence in residents without urinary retention (alternative methods to consider: bladder program/schedule, incontinence garment, straight catheter, condom catheter).
- When catheters are being used, ensure proper aseptic catheter insertion, peri-care, proper emptying procedure including pre and post procedure hand hygiene, ensure tubing is not kinked, and keep the collection bag below the bladder, no disconnections of the closed system, no irrigations unless obstruction is anticipated (follow guidelines, such as those available from the CDC).
- Develop a plan in collaboration with IDT to discontinue catheter use when indicated; use alerts and reminders and 'stop orders' that prompt the nurse to remove the catheter by default after a certain time period or a set of clinical conditions has occurred.
- Consider the purchase of a bladder scanner and train staff on its use as a way to identify retention and assess bladder emptying.
- Develop working relationships with other community health care providers to jointly promote awareness and education on UTI and catheter use and care.

Prevent *Clostridium difficile* infection (CDI)

See section titled "[Prevention of all types of infections](#)" or information on Foundational and Ongoing Education Topics to Consider, Pre-Admission Practices, Admission Practices, Ongoing Care Practices and Monitoring, and Resources to Consider. Additional information specific to preventing *Clostridium difficile* infection is below.

- Identify and follow CDI identification, prevention, and treatment guidelines and protocols, including:
 - o Pre-admission: Assess if the new resident has diarrhea and CDI.
 - o Implement an early response to potential CDI.
 - Establish a process to ensure nurses are aware of residents with diarrhea.
 - Work with the medical director to establish criteria to suspect CDI.
 - Implement pre-emptive contact precautions.
 - Implement standing orders to test for CDI when criteria are met.
 - Set up alert system with the lab for direct notification of a positive CDI result.
 - o Minimize transmission by residents and families, when a resident has a CDI:
 - Keep the resident in a private room if possible.
 - Encourage resident and family hand hygiene to include washing hands with soap and water after toileting, before eating, and when hands are soiled.

- Consider and establish strategies for restricting resident movements to common areas during narrow time periods to quickly contain and prevent spread of infection when the resident has acute diarrhea with CDI.
- o Minimize transmission by staff.
 - Educate staff on how *Clostridium difficile* emerges and spreads, and that it is not killed by soap and water or alcohol, but rubbing hands together and rinsing helps to wash *Clostridium difficile* down the drain.
 - Use contact precautions (i.e., gown and gloves) for residents with active CDI.
 - Make sure ample gown and gloves are available at the resident's door.
 - Designate someone on every shift to replenish supplies.
 - Ensure that staff understand that they must perform hand hygiene even with glove use.
 - Dedicate items for care of residents who are in contact precautions, such as dedicated blood pressure cuff, single use stethoscope, or IV pole.
- o Limit the use of fluoroquinolones and other broad spectrum antibiotics to conditions for which they are medically necessary, as these can increase the likelihood of a person developing CDI.
 - Work with the medical director, pharmacists, and providers to assess antibiotic use in the facility, including the use of Fluroquinolones.
 - Know the frequency/indications for antibiotic use by medical providers in your facility.
 - Develop and implement standard protocols for assessing residents who are suspected of having infections.
 - Standardize information provided during communication between nursing staff and clinicians to improve how antibiotics are used - to support prescribers in making the best decisions and to not apply pressure for antibiotics (e.g., SBAR communication tool).
 - Establish processes for an antibiotic "time out" where the prescriber considers if it is appropriate to stop, streamline, or shorten the duration of the drug.
- o Focus on environmental cleaning and disinfection with attention to high-touch surfaces when caring for persons with CDI.
 - Establish environmental cleaning policies and procedures.
 - Clean and disinfect rooms, surfaces, and shared equipment using bleach or Environmental Protection Agency-approved, disinfectant products to kill *Clostridium difficile* spores.
 - Conduct daily cleaning and disinfection of high touch surfaces such as bedside table, toilet, and sinks. Ensure that other high touch surfaces are not being overlooked, such as bed rails, bedside tables, blood pressure cuffs, call buttons, IV poles, curtain rails, bed frames, door handles, etc.
 - Dedicate single use, disposable equipment for residents with *Clostridium difficile* when possible. Make sure these items aren't re-used by other residents.
 - Ensure that all shared equipment is being cleaned and disinfected between resident use; be clear about who is cleaning certain pieces of equipment/who has responsibility; maintain log books of cleaning/disinfection for large equipment like wheelchairs, transport stretchers, etc.
 - Audit cleaning practices and provide feedback to staff.
- o Vigilantly monitor persons that have had CDI for relapsing disease (people are particularly vulnerable in the first month following infection).
 - Establish a system for staff to know who has had a *CDI*.
 - When discussing a resident's signs and symptoms with a provider, nurses should include information about the resident's recent *CDI* and antibiotic use
- Notify other healthcare facilities (e.g., hospital, emergency department, home health agency, other nursing facility) about CDI when residents transfer.

Prevent other infection events

See section titled "[Prevention of all types of infections.](#)"