

Guidebook for Infection Prevention and Control Preparedness



Telligen QI Connect™

Partnering to improve health outcomes through relationships and data



Telligen QI Connect™

Partnering to improve health outcomes through relationships and data

Guidebook for Infection Prevention and Control Preparedness

Table of Contents

Purpose	2
Problem Identification/Gap Analysis	2
Root Cause Analysis	2
Address Identified Problems.....	3
Select and Implement Change Strategies	3
Hand Washing	3
Isolation Precautions (e.g. Appropriate use of PPE)	4
Environmental Hygiene (e.g. Appropriate Cleaning and Disinfection Procedures).....	5
Vaccinations	6
Antibiotic Stewardship	7
Testing, Screening, and/or Cohorting Residents.....	7
Infection Control Surveillance.....	8
Staff Infection Exposure Prevention	9
Visitor Restriction Infection Prevention.....	10
Other	11
Conducting a Plan-Do-Study-Act (PDSA) Cycle	11



Telligen QI Connect™

Partnering to improve health outcomes through relationships and data

Purpose

This guidebook is intended as a resource to assist with nursing home quality improvement initiatives related to infection control and prevention. It walks through each step of an improvement project beginning with problem identification and ending with the plan-do-study-act (PDSA) cycle. Each section provides resources to help generate ideas for improvement strategies, example change strategies, and metrics to monitor progress. We offer resources to help determine what issue to focus on for improvement, and provide strategies and tools organized by each focus area from the CDC's Infection Prevention and Control Assessment Tool for Long-term Care Facilities.

This guide is not exhaustive; rather it should be used along with a thorough assessment of current activities in your nursing home, an understanding of your nursing home's operations and culture, and technical assistance available for targeted quality improvement.

Problem Identification/Gap Analysis

Use the assessment tools listed below to identify gaps or areas of weakness:

- CDC ICAR Assessment including COVID-19: <https://www.cdc.gov/coronavirus/2019-ncov/downloads/hcp/assessment-tool-nursing-homes.pdf>
- Telligen fillable tools for the CDC IC assessments: <https://www.telligenqiconnect.com/resource/infection-prevention-and-control-ipc-risk-assessment-for-long-term-care-facilities/>
- CMS, LTC Survey Pathway, Infection Prevention, Control & Immunizations - <https://www.cdc.gov/coronavirus/2019-ncov/downloads/hcp/assessment-tool-nursing-homes.pdf>

Other resources related to problem identification:

- CDC/HICPAC Guidelines and recommendations: <https://www.cdc.gov/infectioncontrol/guidelines/index.html>
- CMS State Operations Manual, Appendix PP (download most current version): <https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/GuidanceforLawsAndRegulations/Nursing-Homes>
- Steps for Evaluating an Infection Control Breach: http://www.cdc.gov/hai/outbreaks/steps_for_eval_IC_breach.html

Root Cause Analysis

Once gaps/problems are identified, perform a root cause analysis to determine the major cause(s) of problem. The following resources and templates can be used to guide you through the root cause analysis process or activity:

- Root cause analysis (RCA) is a problem-solving method or process for investigating an incident, failure, actual or potential problem or concern. Use this 1-page document for guidance on when to use a root cause analysis: <https://www.telligenqiconnect.com/resource/when-to-use-root-cause-analysis/>
- The Telligen Fishbone Diagram Worksheet provides direction on how to do a root cause analysis and includes a template of the diagram to fill out. <https://www.telligenqiconnect.com/resource/fishbone-diagram-worksheet/>
- How to Use the Fishbone Tool for Root Cause Analysis. <https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/QAPI/downloads/FishboneRevised.pdf>



Telligen QI Connect™

Partnering to improve health outcomes through relationships and data

- Guidance for Performing Root Cause Analysis (RCA) with Performance Improvement Projects (PIPs), <https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/QAPI/downloads/GuidanceforRCA.pdf>

Address Identified Problems

Select an intervention or change strategy to implement that directly addresses the identified problem and root causes for the problem. A few tips and points for consideration when selecting an intervention are listed below.

- Consider fit of intervention into existing processes and practices
- Ensure leadership, staff, and other stakeholders (e.g. residents, caregivers, partner organizations) understand need to address problem and are bought into the selected method(s) for addressing it
- Designate someone (e.g. staff, consultant) who is responsible for coordinating the IC program, who has training in infection control
- Dedicate necessary and appropriate resources to implementing and sustaining the change

Select and Implement Change Strategies

The following sources will offer ideas for selecting an appropriate intervention or change strategy for the identified problem. The categories align with the infection control domains or area for improvement from your assessment.

Hand Washing

Resources to identify change strategies

- CDC, Hand Hygiene in Healthcare Settings - <https://www.cdc.gov/handhygiene/index.html>
- Provider guideline for Hand Hygiene in Healthcare Settings: <https://www.cdc.gov/handhygiene/providers/guideline.html>
- WHO Hand Hygiene Self-assessment Framework: https://www.who.int/gpsc/country_work/hhsa_framework_October_2010.pdf?ua=1

Examples of Hand Hygiene Auditing Tools:

- Measuring Hand Hygiene Adherence: Overcoming the Challenges: https://www.jointcommission.org/-/media/tjc/documents/resources/hai/hh_monograph.pdf (Page 216)
- Iscrub, a free hand hygiene application of iPhone created by the University of Iowa: <https://apps.apple.com/us/app/iscrub-lite/id329764570>



Telligen QI Connect™

Partnering to improve health outcomes through relationships and data

Example change strategies

- Ensure supplies necessary for hand hygiene (e.g., soap, water, paper towels, alcohol-based hand rub) are readily accessible in resident care areas (i.e., nursing units, resident rooms, therapy rooms, common areas, and near entrance of facility)
- Ensure staff receive hand hygiene training at the time of employment and at least every 12 months; are observed for competency and given feedback for improvement/compliance

Process Measure Examples

- % resident rooms with hand hygiene supplies accessible (pre/post change implementation)
- % staff trained annually (time series)

Short-Term Outcome Measure Examples

- % staff determined to be compliant with hand hygiene practices during routine audit (time series)



How To Calculate Compliance Percent for audits such as hand hygiene or PPE donning and doffing:

Determine the total or whole amount which is the total number observed or audited.

Divide the number to be expressed as a percent by the total. Divide the number who performed the task correctly or appropriately by the total number that were observed or audited. Multiply the resulting value by 100 to determine compliance rate.

EX: If a total of 5 staff are observed performing hand hygiene but only 2 performed hand hygiene correctly. 2 divided by 5 equal 0.4. Then, multiply .4 by 100 to get 40% compliance rate with hand hygiene.

Isolation Precautions (e.g. Appropriate use of PPE)

Resources to identify change strategies

- Guidance for the Selection and Use of Personal Protective Equipment in Healthcare Settings:
<http://www.cdc.gov/HAI/prevent/ppe.html>
- CDC Sequence for Donning and Removing Personal Protective Equipment:
<http://www.cdc.gov/hai/pdfs/ppe/PPE-Sequence.pdf>
- 2007 Guidelines for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings:
<http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html>
- Management of Multi-Drug Resistant Organisms in Healthcare Settings, 2006:
<https://www.cdc.gov/infectioncontrol/guidelines/mdro/index.html>
- This infographic reviews the sequence for putting on PPE, as well as, how to safely remove PPE:
<https://www.cdc.gov/niosh/npptl/pdfs/PPE-Sequence-508.pdf>

Example Change Strategies

- Ensure supplies necessary for adherence to proper PPE use (e.g. gloves, gowns, masks) are readily accessible in resident care areas (i.e. nursing units, therapy rooms)



Telligen QI Connect™

Partnering to improve health outcomes through relationships and data

- Develop a facility policy on Standard Precautions, which includes the selection and use of PPE (indications, donning and doffing procedures)
- Develop a facility policy on Transmission-based Precautions that includes the clinical conditions for which specific PPE should be used (e.g. C. difficile, Influenza)
- Ensure personnel receive training and competency validation on proper use of PPE at the time of employment and at least annually thereafter
- Conduct routine audits on adherence to PPE use, including adherence when indicated, and proper donning and doffing, and provide feedback to personnel regarding their PPE use

Process Measure Examples

- % resident rooms with PPE supplies accessible (pre/post change implementation)
- % staff trained on PPE indications and use annually (time series)

Short-Term Outcome Measure Examples

- % staff determined to be compliant with PPE use during routine audit (time series)

Environmental Hygiene (e.g. Appropriate Cleaning and Disinfection Procedures)

Resources to identify change strategies

- CDC, Guideline for Disinfection and Sterilization in Healthcare Facilities: <https://www.cdc.gov/infectioncontrol/guidelines/disinfection/index.html>
- 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-P.pdf>
- Guidelines for Environmental Infection Control in Healthcare Facilities: <https://www.cdc.gov/infectioncontrol/guidelines/environmental/index.html>
- EPA Listing of disinfectant products with sporicidal activity against C. difficile: <https://www.epa.gov/pesticide-registration/list-k-epas-registered-antimicrobial-products-effective-against-clostridium>
- Options for Evaluating Environmental Infection Control: <http://www.cdc.gov/HAI/toolkits/Evaluating-Environmental-Cleaning.html>
- Environmental Hygiene: Best Practices to Use When Cleaning and Disinfecting Resident Rooms: <https://www.youtube.com/watch?v=Zx9fgg0u4cQ>
- CDC training targeted to environmental services workers: <https://www.cdc.gov/infectioncontrol/training/evs-battle-infection.html>
- States Targeting Reduction in Infections via Engagement (STRIVE) program resources: <https://apic.org/Resources/Topic-specific-infection-prevention/Environmental-services/>

Example Change Strategies

- Ensure supplies necessary for appropriate cleaning and disinfection procedures (e.g. EPA-registered, including products labeled as effective against C. difficile and Norovirus) are available
- Ensure handling of linens to avoid contamination of air, surfaces, and persons (eg. Do not carry dirty linens down hallways; use bins to collect linens in the room)



Telligen QI Connect™

Partnering to improve health outcomes through relationships and data

- Develop a written facility policy for cleaning/disinfection that includes routine and terminal cleaning and disinfection of resident rooms, high-touch surfaces, and common areas.
- Develop policies and procedures to ensure reusable medical devices (e.g blood pressure cuffs, wound care equipment, dental equipment) are cleaned and reprocessed appropriately prior to use with another resident.
- Provide job-specific training for personnel and competency validation on cleaning and disinfection procedures at the time of employment, and annually thereafter
- Audit compliance with protocols for cleaning rooms, high-touch surfaces, and common areas, and provide feedback to staff for improvement and compliance

Process Measure Examples

- % cleaning instances where EPA registered products are used (pre/post change implementation)
- % staff trained annually in cleaning and disinfection procedures (time series)
- Number of reported instances of violation of cleaning procedures
- % of time devices and equipment are cleaned between uses (pre/post change implementation)

Short-Term Outcome Measure Examples

- % staff determined to be compliant with required cleaning procedures during routine audit (time series)

Vaccinations

Resources to identify change strategies

- Immunization of HealthCare Personnel: <http://www.cdc.gov/vaccines/adults/rec-vac/hcw.html>
- CDC Influenza Vaccination Tool-kit for Long-term Care Employers: <https://www.cdc.gov/flu/toolkit/long-term-care/index.htm>
- HHS guidance on fulfillment of the Healthy People 2010 objective of vaccinating 90 percent of nursing home residents against influenza and pneumococcal disease: <https://oig.hhs.gov/oei/reports/oei-01-99-00010.pdf>

Example Change Strategies

- Educate residents, families, and caregivers on importance of vaccines
- Offer annual vaccines on site for employees, or allow paid time off to receive vaccines
- Offer annual vaccines for residents and family members at reduced cost
- Residents are screened at intake for infectious disease, and immunization records are kept up to date

Process Measure Examples

- # of trainings provided to residents, families and caregivers (pre/post intervention)
- % of residents who have attended training (and caregivers/family members)
- % staff who receive vaccine on site, or documented to have received vaccine elsewhere

Short-Term Outcome Measure Examples

- Reduction in incidence of vaccine-preventable infections among staff
- Reduction in incidence of vaccine-preventable infections among residents



Telligen QI Connect™

Partnering to improve health outcomes through relationships and data

Antibiotic Stewardship

Resources to identify change strategies

- 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 Implementation Resources for Antibiotic Stewardship: <http://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html>
- Telligen Antibiotic Time-out Checklist: <https://www.telligenqiconnect.com/resource/antibiotic-time-out-checklist/>

Example Change Strategies

- Educate clinicians about resistance and optimal prescribing related to antibiotic stewardship
- Educate residents and families about antibiotic resistance and appropriate use of antibiotics
- For new residents, review type of antibiotics used, the route they are being administered, how long they have been in use, and when the stop date is
- Review antibiotic use for appropriateness, consult with physician/clinician and/or pharmacist as needed

Process Measure Examples

- % clinical staff trained in optimal prescribing of antibiotics (pre/post intervention)
- % residents and families provided education related to appropriate antibiotic use
- Number of pharmacy consultations related to antibiotic use (time series or average # pre-post)

Short-Term Outcome Measure Examples

- % time resident antibiotic prescriptions deemed appropriate during audit
- % clinical staff applying optimal prescribing of antibiotics

Testing, Screening, and/or Cohorting Residents

Resources to identify change strategies

- CDC Interfacility Transfer form: <https://www.cdc.gov/hai/pdfs/toolkits/Interfacility-IC-Transfer-Form-508.pdf>
- COVID testing guidance: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/nursing-homes-testing.html>
- Guidelines for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings: <http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html>

Example Change Strategies

- Residents are screened at intake for infectious disease and immunization records are up to date; immunizations are offered to all residents.
- Assess new residents for current infections and how they are managed/treated



Telligen QI Connect™

Partnering to improve health outcomes through relationships and data

- Ensure appropriate room placement of resident, providing resident requiring transmission-based precautions with 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. PPE, dedicated medical equipment)
- Review new resident's infections, antibiotic use/treatment plan, and precautions to avoid spread at daily stand-up/IDT meetings

Process Measure Examples

- % new residents screened for infectious disease at intake
- % new residents offered immunizations at intake/receive immunizations at intake if needed
- % of residents with infection who are placed in single room when indicated

Short-Term Outcome Measure Examples

- % reduction in outbreak of infections linked to new residents

Infection Control Surveillance

Resources to identify change strategies

- State Health Department resources: <https://www.cdc.gov/longtermcare/resources/index.html>
- Tracking infections using the National Healthcare Safety Network: <https://www.cdc.gov/nhsn/LTC/index.html>
- SHEA and APIC, Guideline: Infection prevention and control in the long-term care facility: https://apic.org/Resource/TinyMceFileManager/Practice_Guidance/id_APIC-SHEA_GuidelineforICinLTCFs.pdf

Example Change Strategies

- Develop written plan for outbreak response which includes a definition, procedures for surveillance and containment, and a list of syndromes or pathogens for which monitoring is performed
- Educate personnel on prompt reporting of signs/symptoms of a potentially transmissible illness to a supervisor
- Create a written surveillance plan outlining activities for monitoring/tracking infections occurring in residents
- Develop a system to follow-up on clinical information (e.g. laboratory, procedure results and diagnoses) when residents are transferred to acute care hospitals for management of suspected infections, including sepsis
- 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 "care paths" or decision tools to guide nurses in monitoring signs and symptoms of infection (such as UTI or respiratory infection) 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
- With any new/suspicion of infection:
 - Ensure infection prevention and control nurse (or designee) are 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.



Telligen QI Connect™

Partnering to improve health outcomes through relationships and data

- Ensure appropriate initiation of antibiotics (e.g., standardized criteria for infection is met).
- Ensure appropriate room and roommate.
- 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)

Process Measure Examples

- # of reports to supervisor related to suspected infection
- % time surveillance plan used when resident infection outbreaks occur
- % of time follow up occurs for residents who are transferred to hospital
- % time standardized tools (eg. SBAR) used when communicating with physician

Short-Term Outcome Measure Examples

- % of time plan of care adjusted appropriately according to routine audit

Staff Infection Exposure Prevention

Resources to identify change strategies

- Guideline for Infection Control in Healthcare Personnel: <http://www.cdc.gov/hicpac/pdf/InfectControl98.pdf>
- Occupational Safety & Health Administration (OSHA) Bloodborne Pathogen and Needlestick Prevention Standard: <https://www.osha.gov/SLTC/bloodbornepathogens/index.html>
- Guidelines for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings: <http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html>
- CDC Injection Safety Web Materials: <http://www.cdc.gov/injectionsafety>
- CDC training video and related Safe Injection Practices Campaign materials: <http://oneandonlycampaign.org>
- Infection Prevention during Blood Glucose Monitoring and Insulin Administration: <http://www.cdc.gov/injectionsafety/blood-glucose-monitoring.html>
- Frequently Asked Questions (FAQs) regarding Assisted Blood Glucose Monitoring and Insulin Administration: http://www.cdc.gov/injectionsafety/providers/blood-glucose-monitoring_fags.html

Example Change Strategies

- Develop an exposure control plan which addresses potential hazards posed by specific services provided by the facility (e.g., respiratory droplet borne illness, bloodborne illness, etc.).
- Develop work-exclusion policies concerning avoiding contact with residents when personnel have potentially transmissible conditions which do not penalize with loss of wages, benefits, or job status.
- All personnel receive training and competency validation on managing a blood-borne pathogen exposure at the time of employment, and annually thereafter.



Telligen QI Connect™

Partnering to improve health outcomes through relationships and data

- All personnel receive education on the importance of infection prevention measures to contain respiratory secretions to prevent the spread of respiratory pathogens

Process Measure Examples

- % staff trained in management of blood borne pathogen exposure (pre/post intervention)
- % staff trained in application of infection prevention measures for respiratory secretions
- % of exposures resulting in staff exclusion from contact with residents

Short-Term Outcome Measure Examples

- Reduction in exposures of staff to infection
- Reduction in potential exposures of residents to infection

Visitor Restriction Infection Prevention

Resources to identify change strategies

- Steps for visitors to prevent infection spread: <https://www.cdc.gov/coronavirus/2019-ncov/your-health/about-covid-19.html>
- Step-by-step video on mask-wearing covering how to properly use and re-use a mask: <https://www.youtube.com/watch?v=JwPWdkbyizw>

Example Change Strategies

- Post signs at entrances with instructions to individuals with symptoms of respiratory infection to cover their mouth/nose when coughing or sneezing, use and dispose of tissues, and perform hand hygiene after contact with respiratory secretions.
- Provide resources for performing hand hygiene near the entrance and in common areas.
- Offer facemasks to coughing residents and other symptomatic persons upon entry to the facility.
- Educate family and visitors to notify staff and take appropriate precautions if they are having symptoms of respiratory infection during their visit
- Educate residents and family on infection prevention and control (e.g., refrain from visiting when ill, hand hygiene).
- Prevent 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.

Process Measure Examples

- # education sessions offered to family and visitors about infection prevention and appropriate precautions
- #/% of family/visitor attendees at education sessions
- Increase in observed use of masks/precautions among visitors to facility
- Increase in availability/use of handwashing stations at facility entrance (could be measured by pace of need to replace supplies at these stations)

Short-Term Outcome Measure Examples

- Reduction in exposures of staff to infection
- Reduction in potential exposures of residents to infection



Telligen QI Connect™

Partnering to improve health outcomes through relationships and data

Other

- This free course from the CDC [Nursing Home Infection Preventionist Training](#) provides infection prevention and control (IPC) training for individuals responsible for implementing IPC programs in nursing homes. The 23-module course offers continuing education credit and a certificate of completion. Modules especially relevant to responding to the current COVID-19 pandemic include:
 - Module 4 – Infection Surveillance
 - Module 5 – Outbreaks
 - Module 6A – Principles of Standard Precautions
 - Module 6B – Principles of Transmission-Based Precautions
 - Module 7 – Hand Hygiene
- Respiratory Hygiene and Cough Etiquette in Healthcare Settings: <https://www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm>
- Recommendations for preventing the spread of influenza: <http://www.cdc.gov/flu/professionals/infectioncontrol/>
- Resident Notification Toolkit: <http://www.cdc.gov/injectionsafety/pntoolkit/index.html>
- 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.

Conducting a Plan-Do-Study-Act (PDSA) Cycle

Conducting a Plan-Do-Study-Act (PDSA) to test the intervention or change strategy on a small scale and determining whether it improves the identified gap or problem may be helpful as part of piloting the change before implementing it widely in the organization.

- Use the Telligen PDSA worksheet to walk through a PDSA cycle: <https://www.telligenqiconnect.com/resource/pdsa-worksheet/>
- Visit the Institute for Healthcare Improvement (IHI) Model for Improvement for additional guidance, tools, and resources related to PDSAs: <http://www.ihl.org/resources/Pages/HowtoImprove/default.aspx>