HENNEPIN COUNTY
MINNESOTA

Infection Prevention and Control Toolkit for Long-Term Care Settings

2024

A quality improvement framed infection prevention and control toolkit designed to help new infection preventionists develop data driven risk assessments that inform evidence-based infection prevention and control programs.

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Contents

Table of contents

Table of contents

Table of contents

Background

In response to the SARS-CoV-2 pandemic, Hennepin County Public Health (HCPH) received funding from the National Association of County and City Health Officials (NACCHO) in 2020–2021 to explore infection prevention and control (IPC) capacity-building strategies for local public health staff and long-term care facilities (LTCF).

Acknowledgements

This work was made possible by the many community and facility partners who contributed their time and expertise to HCPH's IPC capacity building endeavor. This document incorporates many ideas, tools and processes shared by the Long-Term Care Infection Prevention Coalition of Hennepin County.

Disclaimer Statement

This toolkit was created in a good faith effort to provide IPC resources for LTCF and their partners. Please consult original sources of all links and references to capture their full context and to ensure decision making is based on the most current guidance. Toolkit content is neither a comprehensive list of resources nor is it intended to be a substitute for clinical judgment, professional medical diagnosis, or treatment. Ideas and interpretations are included but do not replace guidance, recommendations or requirements of government public health agencies, professional IPC organizations or applicable regulatory, accreditation or certification agencies, etc. Facilities are responsible for ensuring that the facility's practices align with current guidance and regulatory requirements.

For questions, consultation, and feedback

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We invite you to provide your feedback! Please take this short survey to share your experience utilizing this toolkit using the link or QR code below.

Figure 1. The Long-Term Care Infection Prevention Toolkit Feedback Survey QR Code

Where to begin

Overview

This toolkit incorporates continuous improvement principles intended to help new infection preventionists (IPs) develop data-driven risk assessments that inform infection prevention and control (IPC) program activities.

The content within the text will guide you on how to identify IPC areas of strength, areas where opportunities for improvement exist, and areas where data are missing.

The end of each section will have a resource list. The resource list is where you will find external content, materials, and guidance related to the section's focus area. As you proceed through this toolkit, consider the following concepts:

Start small. Every program, product, and process in long-term care facilities (LTCF) have IPC implications – it's too much to take on all at once.

The IPC risk assessment forms the foundation of the toolkit and guides the selection of resources.

The risk assessment organizes past and current surveillance data (e.g., healthcare worker (HCW) compliance with hand hygiene policies, outbreaks, etc.) into a worksheet that reveals IPC areas of strength, opportunities for improvement and areas where data are missing.

It's important to identify the baseline — or current state — of potential IPC risks so that a) the IP can prioritize areas that require the most urgent attention, and b) IPC program stakeholders — leaders, HCWs, etc. — can measure whether and the extent to which IPC practices are having the intended effect: improving residents' health and safety. You can't know whether you've made progress if you don't know where you're starting from!

In the absence of or as a complement to a current facility risk assessment, consider reviewing the Suggested Priorities for Leaders, QAPI committees and IPs table to identify initial focus areas.

Toolkit resources cover several IPC topics, but don't let this overwhelm you – it doesn't need to be read cover-to-cover. Let your risk assessment be the guide.

Everyone in the facility has a role in IPC, not just the infection preventionist. Shared ownership of IPC practices is essential.

IPs collaborate with unit/department leadership to help prioritize and align IPC activities with evidence-based recommendations. Departmental leadership and HCWs themselves are accountable for ensuring adherence to IPC policies and meeting IPC practice goals for their respective areas and roles.

Quality Assurance/Performance Improvement (QAPI) committee leaders are important IP collaborators, as their skill set in developing and measuring progress on facility initiatives can and should be used to support IPC program capacity building efforts, including continuous quality improvement projects.

Administrative leadership support for the IPC program is vital. Administrators demonstrate support by providing the human and material resources to ensure successful implementation of IPC program activities.

Who are infection preventionists (IPs) and what do they do?

According to the Association for Professionals in Infection Control and Epidemiology (APIC), "IPs are specially trained professionals, leaders, educators, and collaborators from diverse backgrounds, including nursing, public health, laboratory, and allied health fields."[1] IPs coordinate, advocate for and educate healthcare workers (HCW) and residents on IPC best practices, but everyone in the facility is responsible for implementing IPC best practices.

[1]APIC Infection Prevention and You. Monthly Alerts for Consumers (updated 2/27/2018) (accessed 11/7/2022)

Figure 2. The Role of the Infection Preventionist

Toolkit Top 10 for the new and persevering infection preventionist (IP)

As a new IP, you may be overwhelmed by the amount of material available on infection prevention and control (IPC) programs and practices. It's difficult to identify where to begin! Below are recommendations about when and where to start. With the help of your supervisor, create a timeline for reviewing and completing items on the Top Ten List. This may take several months depending on your other responsibilities.

1 Complete trainings on foundational concepts

- ☐ Centers for Disease Control & Prevention (CDC)/Centers for Medicare and Medicaid Services (CMS): Nursing Home IP Training course. ★
  - Free, 24 modules, approximately 20 hours to complete
- ☐ Review Association for Professionals in Infection Control and Epidemiology (APIC) IP Competency Model
  - Review the "to do" checklist
  - Complete the self-assessment tool
- ☐ APIC-Minnesota Chapter Basics of Infection Prevention course ★
  - In-person, 2-day course
- ☐ APIC Long-Term Care Infection Preventionist Essentials
  - Live, virtual, 2.5-day training
- ☐ APIC Roadmap for the Novice Infection Preventionist
- ☐ University of North Carolina at Chapel Hill Statewide Program of Infection Control and Epidemiology (UNC SPICE) Long-Term Care Infection Preventionist Orientation

★ Recommend completing within 4-6 weeks of hire

★ Typically offered twice annually – recommend registering ASAP

2 Join APIC -$215 annual membership fee

Access educational content (i.e., free webinars, discounts on courses, books, and resource guides), network and participate in question-and-answer forums.

- ☐ APIC Minnesota chapter has an active Long-Term Care Committee! $25/year to be part of MN chapter

3 Gather and review regulatory requirements

- ☐ CMS State Operations Manual Appendix PP §483.80 Infection Control
- ☐ Occupational Safety and Health Administration (OSHA) Bloodborne Pathogen Standard & Exposure Control Plan
- ☐ Minnesota Department of Health (MDH) Tuberculosis (TB) screening – see Regulations for TB Control in Minnesota Health Care Settings

4 Gather and review evidence-based IPC recommendations from scientific organizations

- ☐ CDC Core IPC Practices for Safe Healthcare Delivery in All Settings ★
- ☐ APIC Text Online - review chapters as you're able (requires purchase)
- ☐ APIC Infection Prevention Guide to Long-Term Care, 2nd Edition ★

★ Recommend reviewing within 1-2 weeks of hire

Textbook-like guide (requires purchase)

- ☐ MDH Infection Prevention & Control
- ☐ Society for Healthcare Epidemiology of America (SHEA)/APIC Guideline: IPC in the LTCF
- ☐ Standard Precautions, Implementation of Personal Protective Equipment (PPE) Use in Nursing Homes to Prevent Spread of Multidrug-resistant Organisms (MDROs) & Transmission-Based Precautions
- ☐ Agency for Healthcare Research & Quality (AHRQ): A Unit Guide to IP for LTC Staff

★Recommend reviewing within 6 months of hire

5 Take an inventory of existing data

Reviewing existing data will help evaluate current risks and/or uncover unknown risks. Consider reviewing healthcare worker (HCW) adherence to IPC practices (see Table 1):

- ☐ Standard precautions ★
- ☐ Resident care practices ★
- ☐ Environment of care processes ★
- ☐ Implementation of antimicrobial stewardship core elements
- ☐ Infectious disease exposure prevention strategies

★Routine IP visibility provides opportunities for staff to ask questions, receive just-in-time coaching and acknowledgement

6 Review the facility's current IPC risk assessment and action plan to prioritize focus area

Ask the Quality Assurance and Performance Improvement (QAPI) committee which top three to five IPC priority goals they have identified for the current year.

1. Where has progress been made? What worked (and didn't work) and why?
2. Which areas still need improvement? What's been tried so far?

Consider reaching out to public health partners (i.e., Hennepin County Public Health and MDH ICAR Team) to complete a free, individualized, non-regulatory assessment.

7 Locate and review existing IPC policies and procedures

Consider reviewing the following:

- ☐ Hand hygiene
- ☐ Transmission-based precautions
- ☐ Antibiotic stewardship
- ☐ Vaccines
- ☐ Water management

8 Locate and review facility IPC education and competency assessment materials for HCW to increase familiarity

Consider reviewing the following:

- ☐ New employee IPC orientation

- ☐ Annual IPC trainings
- ☐ Annual nursing (licensed/unlicensed HCW) competencies
- ☐ Department specific trainings

9 Collaborate with departmental and administrative leaders to conduct IPC practice rounding

Walk throughout the facility to observe IPC practices in real-time ★

- ☐ Audit for improvement opportunities in areas where IPC-related processes take place (e.g., resident care units, kitchens, gyms, EVS closets, laundry)
- ☐ Provide positive reinforcement to HCW who are adhering to expectations

Consider the data collected during rounds – who collects them, who reviews findings and who follows up to ensure necessary changes have been made?

★ Routine leadership rounding reinforces a culture of IPC as *everyone's* responsibility

10 Organize your resources and materials

Use a three-ring binder (print or digital) and/or browser bookmarks to organize materials gathered from each of the items above.

Infection prevention and control continuous improvement process

The toolkit applies a continuous improvement (CI) process, which consists of six steps informed by Hennepin County's CI Coaching Plan[2]. Each toolkit section presents an infection prevention and control (IPC) goal with recommended actions and questions to help the IP and facility leaders collaboratively identify improvement opportunities and guide their implementation using this process. Steps are summarized below. Refer to Table 1 for examples of priority IPC goals and an illustration of how to apply the IPC CI process.

Use your risk assessment to identify which topics to prioritize depending on their associated risk. In the absence of a current IPC risk assessment, consider choosing topics based on 1) current audit data that reveal improvement opportunities or 2) areas in which current data do not exist.

✓ Step 1: Select an improvement opportunity

What barriers might get in the way of healthcare workers (HCW) practicing good IPC?
What are the causes of or contributors to these barriers? Focus your efforts on these first.

Use your risk assessment to identify which topics to prioritize depending on their associated risk. In the absence of a current IPC risk assessment, consider choosing topics based on 1) current audit data that reveal improvement opportunities or 2) areas in which current data do not exist.

[2] Hennepin County Center of Innovation and Excellence CI Coaching Plan- A Strategic Approach to Expert CI Coaching.

Step 2: Measure and analyze the current baseline

What facts or data indicate IPC challenges, barriers or pathogen transmission risks exist?

Assess the current state (i.e., evidence of the risk). Determine if the facility has collected any observational audit or surveillance/chart review data on the selected improvement opportunity.

Audit

1. Determine the extent of the IPC risk topic in your facility by reviewing existing data or by beginning to collect it. Consider infection rates or antibiotic treatment days.
2. Determine HCW adherence to IPC practices or processed described in facility protocols.
    a. How frequently are audits conducted to monitor adherence?
    b. Who performs them and are they completed reliably?

Review

1. What trends or patterns did the audit data show?
    a. Does the risk behavior happen more on a certain unit, time of day, during specific activities?
2. Can we identify the root causes of the trends (i.e., why this trend might be occurring)?
    a. What are the conditions in areas where this risk behavior isn't happening as frequently?
    b. What do HCW think could be contributing to the risk behavior?

Consider using a fishbone diagram to help identify why the IPC barrier/challenge/risk is happening. Answer the question at the "head" of the challenge for each topic. Causes often fall in the six categories below: people, process, technology, environment, management, and measurement. For each cause you come up with, ask "why" five times and write the answers out to find the root cause. Circle the 2-3 causes you find that are likely the greatest contributing factors.

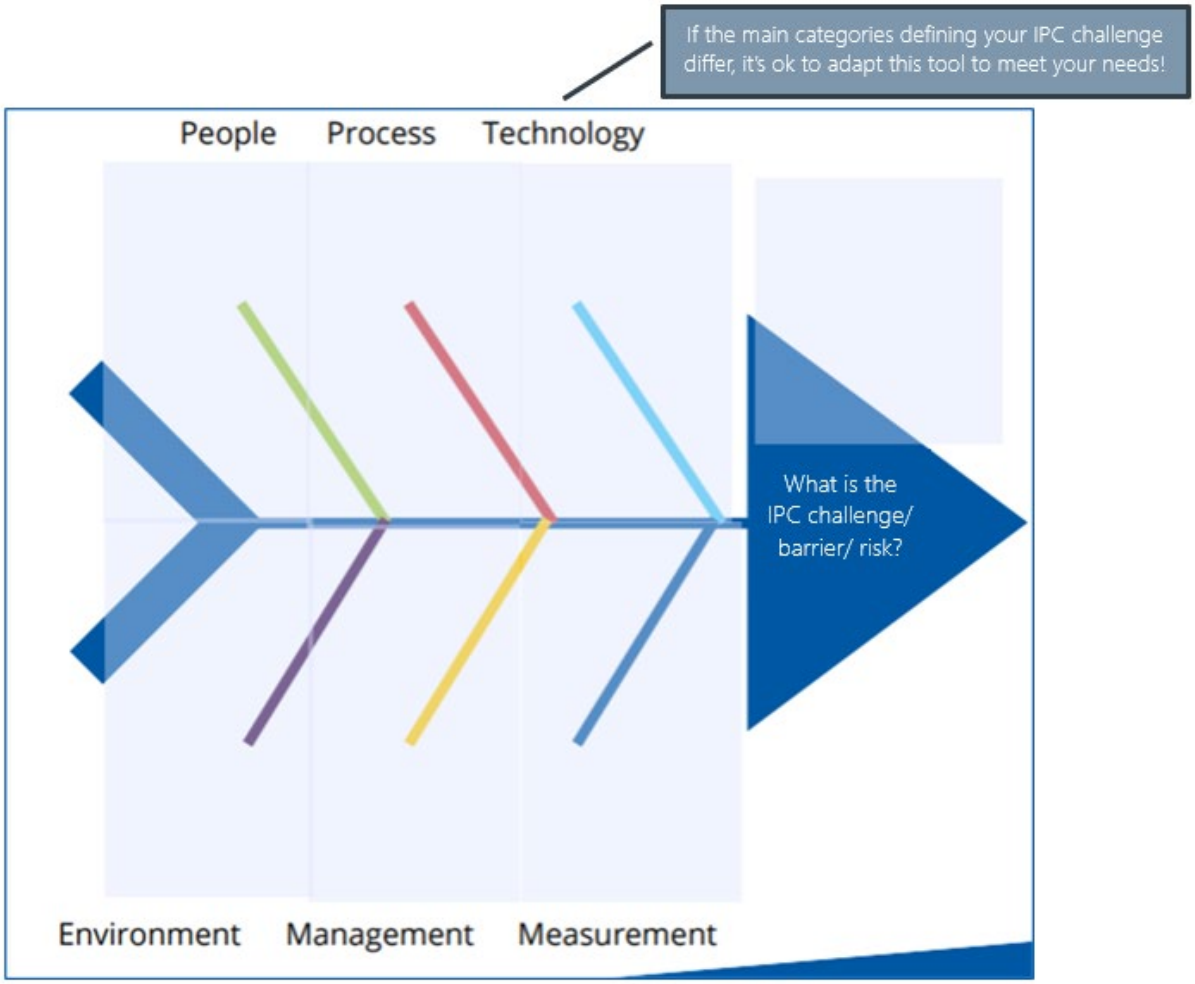


Figure 3. Fishbone diagram, modified from Hennepin County CI Coaching Plan

3. Do the policies and procedures on this topic align with best practice recommendations?
   a. Are they written in plain, understandable language?
4. Do HCW have the foundational knowledge and skills to adhere to best practices?
   a. Are learning opportunities interactive? Are skill competencies evaluated by return demonstration?
   b. Do HCW receive positive reinforcement for performing tasks correctly?

Summarize

Summarize findings and share with QAPI or at department meetings.

Step 3: Future goal development

What would success look like? Develop a S.M.A.R.T. goal that describes how you want to improve.

The MDH Public Health Quality Improvement Toolbox provides a helpful framework:

Specific: Who and what?

Measurable: By how much?

Achievable: How?

Relevant: Why?

Time-bound: When?

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff, QAPI committee), brainstorm action steps that will help decrease the IPC risk and meet the goal. Refer to evidence-based recommendations and your review from Step 2. Consider the following question:

> What is one change in policy, protocol, operations, products, workflow, education, surveillance, strategy, etc., to propose to the QAPI committee?

Tip: When brainstorming, first aim for quantity – get as many ideas on the table as possible. Later, review for quality and eliminate accordingly.

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

> *"If you can't measure it, you can't improve it." – Peter Drucker*

Step 6: Decision

Based on the measurement results, determine whether the intervention (e.g., dispenser placement) should be. In other words, if things turned out well, consider testing changes more broadly or intensifying the changes to the original process. Maybe you need to alter certain elements and reimplement to see if that brings you closer to success. Or maybe you need significant modifications that require revisiting your initial brainstorming list and starting with a new approach.

Table 1. IPC Continuous Improvement Process template

PRIORITY IPC IMPROVEMENT OPPORTUNITIES (USE SUGGESTIONS BELOW OR MODIFY TO ADD YOUR OWN)	BASELINE RISK DATA	FUTURE GOAL	BRAINSTORM ACTION STEPS AND BEGIN TRIAL	MEASUREMENT STRATEGIES	DECISION POINT: ADOPT, ADAPT, OR ABANDON?
Adherence to standard and transmission-based precautions: ☒ Hand hygiene (HH) ☐ Use of PPE when bloody/body fluid exposure anticipated ☐ Safe injection practices ☐ Transmission-based precautions	*From Jan – Jun 2023, average HH compliance on Unit Z= 70%.*	*Unit Z HH compliance will increase to 80% by Jan 2024*	*Increase accessibility of hand sanitizer dispensers on Unit Z (add 10 dispensers)*	*Unit Z average HH compliance from Jul – Dec 2023= 82%*	*Keep new dispensers on Unit Z, add 10 dispensers to Unit Y*
Resident care practices: ☐ Invasive device insertion/ maintenance/ removal ☐ Wound care					
Environment of care processes (for nursing and environmental services staff): ☐ Cleaning and disinfection- reusable medical equipment					

Where to begin

☐ Cleaning and disinfection- environmental surfaces ☐ Separation of clean and dirty supplies to prevent cross-contamination					
Antibiotic stewardship core elements implementation: ☐ Antibiotic use policy/protocol ☐ Track one antibiotic use process and outcome measure					
Infectious disease exposure prevention: ☐ Vaccination ☐ Outbreak management					

Where to begin: Resources

Risk assessment tools

1. Lee, TB, Montgomery OG, Marx, J, Olmsted, RN, Scheckler, WE. Recommended practices for surveillance: APIC, Inc. *Am J Infect Control* 2007;35:427-40.
2. University of North Carolina at Chapel Hill Statewide Program for Infection Control and Epidemiology (SPICE) LTC Infection Prevention Risk Assessment Template
3. The Joint Commission Guide to Risk Assessment
4. SPICE Long-Term Care Infection Prevention Risk Assessment
5. Joint Commission Resources Using the Risk Assessment to Set Goals and Develop the IPC Plan

Education

1. CDC Nursing Home IP Training Course – Module 2 The Infection Preventionist
2. CDC Nursing Home IP Training Course – Module 3: Integrating IPC into the QAPI Program
3. CDC Nursing Home Infection Prevention Training Course – Module 4: Infection Surveillance
4. CDC Nursing Home Infection Prevention Training Course – Module 5: Outbreaks

Tools and templates

1. MDH ICAR Infection Prevention Audit Tools
2. Marra, A.R., Pavão dos Santos, O.F., Cendoroglo Neto, M. et al. Positive Deviance: A New Tool for Infection Prevention and Patient Safety. Curr Infect Dis Rep 15, 544–548 (2013).
3. UNC SPICE Long-Term Care Infection Prevention Program Policy template

Continuous improvement tools

1. IHI How to Improve. Science of Improvement: Establishing Measures
2. Michigan 5 Whys Guide and Template
3. UNC SPICE Data Feedback Template
4. MDH Public Health Quality Improvement Toolbox
5. Regional Educational Laboratory Northeast and Islands Adopt, adapt, abandon flow chart

Suggested priorities for leaders, QAPI Committee and IPs

Leadership priorities	QAPI priorities	IP priorities
Hand hygiene policy	Hand hygiene auditing	Hand hygiene education and competency
Exposure control plan updates	Injection/infusion safety and point-of-care testing safety audits	Injection/infusion safety and point-of-care testing safety education and competency
Provide regular feedback on urine culture appropriateness and	Identify urine culture and antibiotic stewardship root causes of successes and gaps	Urine culture and/or antibiotic time out (process and outcome) tracking

antibiotic use/resistance to clinicians, staff		
Define roles and responsibilities for all HCW involved in cleaning and disinfecting (i.e., nursing and environmental services (EVS)	Set cleaning and disinfecting adherence performance improvement goals	Audit HCW compliance with cleaning and disinfecting protocols

Standard Precautions, Enhanced Barrier Precautions (EBP) and Transmission-Based Precautions (TBP)

"Standard Precautions… are based on the principle that all blood, body fluids, secretions, excretions [except sweat], nonintact skin, and mucous membranes may contain transmissible infectious agents. Standard Precautions include a group of infection prevention practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which healthcare is delivered."

(CDC Guideline for Isolation Precautions)

Figure 4. CDC Clean Hands Count Infographic

Hand Hygiene

Step 1: Select an improvement opportunity

What barriers might get in the way of healthcare workers (HCW) practicing hand hygiene? What are the causes of or contributors to these barriers? Focus your efforts on these first.

1. Do HCW understand CDC's recommendations on the who, what, when, where, why and how of hand hygiene required to break the chain of transmission?
2. Do HCW see you and other facility leaders role modeling hand hygiene?

Goal: Reduce barriers to performing hand hygiene to limit pathogen transmission to HCW and subsequent residents and environmental surfaces.

Actions: Leadership, in collaboration with IP, reinforces IPC as everyone's responsibility by completing actions below.

Step 2: Measure and analyze the current baseline

What facts or data indicate that hand hygiene challenges, barriers or pathogen transmission risks exist? Assess the current state (i.e., evidence of the transmission risk). Determine if the facility has collected any hand hygiene audit data.

Audit

1. On one unit/department, observe HCW compliance with 1) hand hygiene upon entering resident rooms and 2) hand hygiene upon exiting resident rooms.
    a. Aim for 30 observations/month; gather three to six months of data to establish a baseline.
    b. Note the difference between auditing (i.e., discreet observations to determine hand hygiene compliance) and competency (i.e., return demonstration as a part of education).
2. Calculate proportion of hand hygiene opportunities that are completed per facility expectations.
    a. Number of times hand hygiene is performed correctly divided by the number of opportunities to perform hand hygiene correctly. Multiply by 100 to calculate hand hygiene adherence percentage.

Review

1. Review audit data and look for trends.
2. Identify root causes for the successes and gaps.
3. Do facility policies/ procedures/ protocols clearly communicate expectations and align with best practice recommendations?
4. Do HCW have the knowledge and skills to perform hand hygiene?
    a. Recommended IPC competencies for HCW:
        i. Demonstrate proper hand hygiene.
        ii. Describe appropriate use of hand hygiene products (soap and water, antimicrobial soap, waterless alcohol agent) and when to use each.

b. Reinforce alcohol-based hand sanitizer (ABHS) as the preferred method for cleaning HCW hands in most clinical situations.

5. Are there environmental constraints to performing hand hygiene? Could hand hygiene be even easier?
   a. Ensure ABHS dispensers are accessible in locations throughout HCW workflow where hand hygiene frequently needs to be performed (consider bedside accessibility).
   b. Consider asking HCW where they think dispensers should be located.

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes what success looks like.

Example: HCW on Unit Z will increase hand hygiene compliance upon room entry and exit to 80% by [date six months from now] or HCW on Unit Z will increase hand hygiene compliance upon room entry and exit by X% by [date six months from now].

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff, QAPI committee), brainstorm action steps that will help decrease the IPC risk and meet the goal - refer to evidence-based recommendations. Consider:

> What is one change in policy, protocol, operations, products, workflow, education, surveillance strategy, etc. to propose to the QAPI committee?

Example: Unit Z staff said that ABHS dispensers weren't convenient to use when they are entering or exiting resident rooms, so one improvement to consider is placing ABHS dispensers outside of each resident room.

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

Example: Once new ABHS dispensers have been in place for three months, IP, Unit Z manager and [QAPI member names] will collect 50 hand hygiene observations in months four and five. Compare this compliance rate with the original compliance rate (70%).

Step 6: Decision

Based on the measurement results, determine whether the intervention (e.g., ABHS dispenser placement) should be adopted/adapted/abandoned in lieu of another strategy.

Standard Precautions, Enhanced Barrier Precautions (EBP) and Transmission-Based Precautions (TBP)

Standard, Enhanced Barrier and Transmission-Based Precautions Resources

Personal protective equipment (PPE) use

Step 1: Select an improvement opportunity

How is HCW PPE selection and use monitored and quantified?

Goal: Unit/departmental leaders and QAPI committee members — in collaboration with IP — reduce barriers to appropriate PPE selection and use to limit pathogen transmission to HCW and — if the chain of infection isn't broken — subsequent residents and environmental surfaces.

HCW need to see and hear clinical leaders prioritizing and role modeling correct PPE use.

Step 2: Measure and analyze the current baseline

Assess the current state of HCW PPE compliance. What observational audit data already exist?

Audit

1. Observe HCW compliance with 1) PPE donning and 2) PPE doffing on one unit/department.
   a. Aim for 30 observations/ month; gather three to six months of data to establish a baseline.
   b. Note the difference between auditing (i.e., discreet observations to determine PPE use compliance) and competency (i.e., return demonstration as a part of education).
2. Calculate the proportion of PPE use opportunities completed per facility expectations.
   a. Number of times PPE use is performed correctly divided by the number of PPE use opportunities to be performed correctly. Multiply by 100 to calculate PPE use adherence percentage.

Review

1. Audit data. Do units/departments already conduct and document observational audits? Look for trends and identify root causes for the successes and gaps.
2. Facility PPE use policies/protocols pertaining to Standard Precautions, EBP and TBP: Do they clearly communicate expectations and align with best practice recommendations?
   a. Consider appropriate indications for and duration of TBP.
2. Verification of HCW knowledge and skills to use PPE correctly.
   a. Recommend HCW IPC competencies: Describe how microorganisms are transmitted in healthcare settings and demonstrate standard, EBP and TBP for all resident contact in healthcare settings; specifically:
      i. Identify the links in the chain of infection.
      ii. Differentiate between transmission routes of microorganisms in the health care setting (e.g., airborne, contact, droplet).
   b. Apply principles of asepsis (e.g., clean vs. dirty tasks, sterile vs. non-sterile procedures).
   c. Describe the principles of Standard Precautions.

d. Describe the principles of EBP, including when, how and why to initiate.

e. Describe the categories of TBP and when to initiate the preventive activities of each category.

f. Describe appropriate resident placement (e.g., room type, cohorting) relative to the category of TBP.

g. Describe appropriate interventions required during resident transport relative to the category of TBP.

h. List the appropriate PPE items for each category of TBP.

i. Demonstrate how to put on and take off PPE.

j. Demonstrate fit check (user seal check) of NIOSH-approved respirator.

k. Describe appropriate disposal of PPE.

l. Describe the signs, symptoms and diagnoses that would alert a HCW to initiate TBP (e.g., fever with cough, with skin rash/lesion, with other respiratory symptoms, or gastrointestinal symptoms).

3. Core components of a Respiratory Protection Program.

   a. Access respirator fit testing resources as needed.

4. Environmental constraints to correctly using PPE.

   a. Ensure PPE is accessible for use in all resident rooms as part of Standard Precautions

      i. Are gloves available in multiple sizes in frequently used locations?

   b. Ensure PPE is accessible for use with Enhanced Barrier Precautions and/or TBP.

5. Define 'room entry' in facility policies.

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric. Consider using the structure suggested by the MDH Quality Improvement Toolbox:

[Who] will do [what] resulting in [measure] by [when].

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff, QAPI committee), brainstorm action steps that will help decrease the transmission risk caused by inconsistent PPE use and meet the goal; refer to evidence-based recommendations. Consider the following:

What is one change in policy, protocol, operations, products, workflow, education, surveillance strategy, etc. to propose to the QAPI committee?

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal. Consider who else will be responsible for completing the review from Step 2, how staff and departmental leaders can contribute to developing and evaluating process changes, when outcomes will be measured, how facility leaders can support your plan (i.e., outline your specific ask as to how they can help ensure accountability), and how progress updates will be documented and communicated to staff and leaders.

Step 6: Decision

Determine whether the intervention should be adopted/adapted/abandoned in lieu of another strategy. Consider what you'll do if your process change works or doesn't work.

Standard, Enhanced Barrier and Transmission-Based Precautions Resources

Safe medication preparation, point-of-care testing and injection practices

Step 1: Select an improvement opportunity

What barriers could prevent safer sharps use/disposal or lead to cross-contamination or bloodborne pathogen (BBP) exposure? What are the causes of/contributors to these barriers? Focus on these first.

Is the facility implementing its BBP exposure control plan and trending the data?

Goal: Prevent BBP exposures for residents and HCW

Step 2: Measure and analyze the current baseline

Assess the current state (i.e., evidence of the BBP exposure or medication cross-contamination risk). Determine whether a sharps injury log, medication administration incident report and/or blood glucose testing observational audit spreadsheet are maintained.

Audit

1. Deploy healthcare leaders to audit HCWs' adherence to the facility's medication preparation, administration and point-of-care (POC) blood testing policy/procedures.
    a. Aim for 30 observations/ month; gather three to six months of data to establish a baseline.
    b. Pay attention to potential barriers/environmental constraints and reward HCWs' safe practices.
    c. Ensure processes are in place to prevent and monitor for potential drug diversions.
2. Calculate HCW compliance with facility medication preparation/administration and testing protocols.
    a. To calculate compliance, take the number of times a behavior/process was observed to be performed correctly divided by the number of opportunities for the behavior/process to be performed correctly. Multiply by 100 to get a percentage (%).
        i. Medication preparation and infusion/injection safety practices compliance %=
        ii. POC blood glucose testing process compliance %=
    b. Quantify the number of HCW blood/body fluid exposures due to a sharps injury or splash/spray.

Review

1. Audit data. Look for trends and identify root causes for the successes and gaps.
    a. Does the QAPI committee implement procedures for reporting and examining sharps injuries and injury hazards, per the Occupational Safety and Health Administration (OSHA)?
    b. Consider using CDC's worksheet to organize data on sharps injuries, near misses and blood/body fluid splashes and sprays into a spreadsheet and review for trends.
2. Opportunities that facility leaders take or could take to prioritize use of safety-engineered devices.
3. Facility policies for evidence of clearly communicated expectations and alignment with safe injection and glucometer use best practice recommendations and regulations.

a. Exposure Control Plan is reviewed and updated "at least annually and whenever necessary to reflect new or modified tasks and procedures which affect occupational exposure and to reflect new or revised employee positions with occupational exposure.[3]"

4. Documentation that HCW have the knowledge and skills to implement policies/procedures correctly.

Figure 5. Excerpt from CDC One and Only Campaign Infographic

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric.

Step 4: Brainstorm action steps

[3] OSHA Bloodborne Pathogen Standard 1910.1030(c)(1)(iv)

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff/supply purchasers, QAPI committee), brainstorm action steps that will help decrease the IPC risk and meet the goal; refer to evidence-based recommendations. Consider one change in policy, protocol, operations, products, workflow, education, surveillance strategy, etc. to propose to the QAPI committee.

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

Step 6: Decision

Determine whether the intervention should be adopted/adapted/abandoned in lieu of another strategy.

Standard and transmission-based precaution resources

General

1. CDC Learn About Infection Control in Health Care
2. CDC Core IPC Practices for Safe Healthcare Delivery in All Settings
3. APIC Data Gathering and Summary Reports
4. AHRQ Auditing Strategies to Improve Infection Prevention Processes in Nursing Homes
5. NHSN Prevention Process Measures Surveillance Protocol for Long-term Care Facilities
6. MDH Guideline for the Management of Antimicrobial Resistant Microorganisms in Minnesota LTCF
7. MDH Respiratory Protection Program

Standard precautions

Education

1. CDC Nursing Home Infection Preventionist Training Course – Module 6A: Principles of Standard Precautions
2. CDC Nursing Home Infection Preventionist Training Course – Module 9: Respiratory Hygiene and Cough Etiquette (not explicitly covered in Toolkit)

Hand hygiene

Guidelines and recommendations

1. APIC Implementation Guide: Guide to Hand Hygiene Programs for Infection Prevention
2. CDC Guideline for Hand Hygiene in Health-Care Settings
3. CDC Hand Hygiene in Healthcare Settings - Healthcare Providers: Fingernail Care and Jewelry

Education

1. CDC Nursing Home Infection Prevention Training Course – Module 7: Hand Hygiene
2. MDH videos: How to Wash Your Hands and Cleaning Hands with Hand Sanitizer

Tools

1. LTC IP Coalition of Hennepin County Important Moments for Hand Hygiene in the LTC Setting Poster
2. CDPH Hand Hygiene Observation Tool
3. UNC SPICE Hand Hygiene/Transmission-Based Precautions Observation Tool
4. UNC SPICE Hand Hygiene Competency Validation
5. CDC Standard Precautions- Observation of Personal Protective Equipment Provision (cdc.gov)

Supporting articles

1. CDC Clinical Safety: Hand Hygiene for Healthcare Workers
2. Carrico RM, Rebmann T, English JF, Mackey J, Cronin SN. Infection prevention and control competencies for hospital-based health care personnel. *Am J Infect Control*. 2008 Dec;36(10):691-701.
3. Gesser-Edelsburg, A., Cohen, R., Halavi, A.M. *et al.* Beyond the hospital infection control guidelines: a

qualitative study using positive deviance to characterize gray areas and to achieve efficacy and clarity in the prevention of healthcare-associated infections. *Antimicrob Resist Infect Control* 7, 124 (2018).

PPE

Guidelines and recommendations

1. CDC Healthcare Infection Control Practices Advisory Committee (HICPAC): Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (2007)
2. CDC Implementation of PPE in Nursing Homes to Prevent Spread of Novel or Targeted MDROs

Education

1. CDC Nursing Home Infection Preventionist Training Course – Module 6B: Principles of TBP
2. CDC/STRIVE Infection Control Basics

Tools

1. UNC SPICE Hand Hygiene/Transmission-Based Precautions Observation Tool
2. CDC Nursing Home Infection Preventionist Training Course – Module 6A: Principles of Standard Precautions
3. CDC Nursing Home Infection Preventionist Training Course – Module 6B: Principles of Transmission-Based Precautions
4. SPICE Personal Protective Equipment (PPE) Competency Validation

Enhanced barrier precautions

1. CDC Implementation of PPE Use in Nursing Homes to Prevent Spread of Multidrug-resistant Organisms
2. CDC Reviews, Products & Recommendations
3. CDC Frequently Asked Questions (FAQs) about Enhanced Barrier Precautions in Nursing Homes

Safe injection practices

Guidelines and recommendations

1. CDC Preventing Unsafe Injection Practices
2. CDC Sharps Injury Prevention Workbook
3. MDH Information for Health Professionals about Injection Safety
4. CDC Drug Diversion
5. CDC Safe Injection Practices to Prevent Transmission of Infections to Patients
6. CDC Considerations for Blood Glucose Monitoring and Insulin Administration
7. OSHA Model Plans and Programs for the Bloodborne Pathogens and Hazard Communications Standards

Education

1. CDC Nursing Home Infection Preventionist Training Course – Module 10D: Point-of Care Blood Testing
2. CDC Nursing Home Infection Preventionist Training Course – Module 8: Injection Safety

3. MDH Injection Safety Workshop: Three-part Recorded Webinar Series
4. CDC Tune in to Safe Healthcare: A CDC Webinar Series

Tools

1. CDC Injection Safety Checklist
2. CDC Injection Safety: Observation of Centralized Medication Area
3. CDC Nursing Home Infection Preventionist Training Course – Module 8: Injection Safety

Supporting articles

APIC Position Paper: Safe Injection, Infusion, and Medication Vial Practices in Health Care (2016)

Continuous improvement resources

Antibiotic Stewardship

Step 1: Select an improvement opportunity

Figure 6. Be Antibiotics Aware

Does the antibiotic stewardship policy contain a list of facility-approved indications for collecting urine cultures? And do they align with CDC's urine culture stewardship recommendations?

Goal: Reduce unnecessary urine culturing and antibiotic treatment of asymptomatic bacteriuria when it is not indicated.

"The prevalence of asymptomatic bacteriuria (ASB) in patients without indwelling urinary catheters varies widely among groups and is more common in women, the elderly, those with urogenital abnormalities, institutionalized patients, and certain comorbidities. Treatment of ASB in these patients contributes significantly to antibiotic misuse." (CDC)

Step 2: Measure and analyze the current baseline

Assess the current state of the antibiotic stewardship program, i.e., evidence of practices that decrease the risk of microorganisms developing abilities to resist the effects of drugs designed to kill them or slow their growth. Determine if any process (e.g., antibiotic time-outs, appropriate culturing or prescribing) or outcome (e.g., summary of microbiology reports or an antibiogram) data exist

Audit

1. Audit documented indications for urine cultures and compare with Loeb et al. (2005) - see MN Sample Antibiotic Stewardship Policy for LTCF.
2. Audit HCW compliance with conducting antibiotic time-outs on one unit/department.

a. Collect 3 to 6 months of resident antibiotic start data.
b. Consider using this graph-generating tool from MDH: (Excel)
c. For each month, calculate the total number of antibiotic starts, and of those:
    i. The proportion whose order indications align with Loeb et al. (2005)
    ii. The proportion that completed an antibiotic time-out.

Review

1. Review audit data, look for trends and identify root causes for the successes and gaps.
2. Do policies/procedures clearly communicate expectations and align with best practice recommendations and regulations? For example:
    a. Infectious Diseases Society of America (IDSA) recommendations regarding asymptomatic bacteriuria management in elderly institutionalized subjects are incorporated into order sets
    b. Loeb Criteria are considered for decisions regarding antibiotic initiations
    c. Standardized Situation-Background-Assessment-Response/Request (SBAR) communication tools are used for communication about residents' change in condition to clinicians
    d. Antibiotic time-outs are performed for each resident 72 hours after antibiotics are initiated to reassess the 5 Rights- right diagnosis, drug, dose, duration and de-escalation potential
    e. Specimen submission criteria that align with Loeb (2005) or CDC urine culture stewardship recommendations
3. Demonstrate critical thinking skills while providing education and observe each HCW's return demonstration to verify their competency to perform necessary skills. Recommended IPC competencies: Ensure HCW can describe the role of microorganisms in disease; specifically:
    a. Describe the different types of microorganisms (bacteria, viruses, fungi, etc.) and their role in healthcare-associated infections (HAI).
    b. Describe antimicrobial resistance and its importance in HAIs.
    c. Demonstrate proper techniques for collecting, handling and transporting of laboratory specimens.
4. Are there environmental constraints to correctly implementing interventions (e.g., inability to access real-time culture reports, lack of electronic medical record templates that cue follow-up actions)?

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

What would success look like?

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes what success looks like. For example:

By [date three to six months from now], the proportion of urine cultures that align with the Loeb et al. (2005) algorithm will increase by [X %] from [current percentage] so that fewer residents receive treatment for asymptomatic bacteriuria when it is not indicated.

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., medical director, clinicians, unit leaders and QAPI committee), brainstorm action steps that will help decrease the risk of microorganisms becoming resistant (i.e., unable to be killed) to antimicrobials and meet the goal — refer to evidence-based recommendations. Consider one change in policy, protocol, operations, products, workflow, education, surveillance strategy, etc. to propose to the QAPI committee.

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal. For example, consider defining who will be responsible for reviewing residents' charts for symptom criteria prior to specimen collection, how frequently reviews should take place, where the documentation is stored, what other background information should be collected, when and where data trends will be evaluated.

Step 6: Decision

Determine whether the intervention be **adopted/adapted/abandoned in lieu of another strategy**. Consider what you'll do if your process change works or doesn't work.

Antibiotic Stewardship: Resources

Implementation resources

1. Minnesota Antimicrobial Stewardship Program Resources for Long-term Care Facilities
2. Minnesota Sample Antibiotic Stewardship Policy for LTCF
3. Minnesota Minimum Criteria for Initiation of Antibiotics in Long-Term Care Residents
4. Johns Hopkins Medicine Toolkit to Enhance Nursing and Antibiotic Stewardship Partnership
5. CDC Core Elements of Antibiotic Stewardship – Core Elements of Antibiotic Stewardship for Nursing Homes
6. Minnesota 72-Hour Antibiotic Time-Out Sample Template
7. AHRQ Toolkit to Improve Antibiotic Use in Long-Term Care

Training and education

1. CDC TRAIN Antibiotic Stewardship Training Series
2. CDC Tune in to Safe Healthcare: A CDC Webinar Series

Supporting articles

1. Loeb et al. Effect of a multifaceted intervention on number of antimicrobial prescriptions for suspected urinary tract infections in residents of nursing homes: cluster randomised controlled trial. *British Medical Journal* 2005.
2. Carrico RM, Rebmann T, English JF, Mackey J, Cronin SN. Infection prevention and control competencies for hospital-based health care personnel. *Am J Infect Control*. 2008 Dec;36(10):691-701.
3. Infectious Diseases Society of America (IDSA) Guidelines for the Diagnosis and Treatment of Asymptomatic Bacteriuria in Adults | Clinical Infectious Diseases | Oxford Academic (oup.com)

Continuous improvement resources

Infectious disease exposure prevention

Figure 7. More Project Firstline resources available on Minnesota Department of Health website

Why is measuring the baseline risk important?

Determining a baseline is key to the surveillance process. A baseline helps describe what is typically expected for whatever one is measuring, e.g., compliance with IPC practices, like hand hygiene, or rates of organism specific infection or colonization. When enough data points are collected over time, one can begin to see trends and more easily identify when data points are deviating from those expected trends, e.g., a cluster of infections, and initiate an intervention to improve IPC practices and outcomes.

Epidemiologically important organisms

Step 1: Select an improvement opportunity

Has the facility defined triggers that would cue a cluster and/or outbreak investigation for the organisms associated with high transmission risks in long-term care?

Report illnesses/infections to MDH per the Reportable Disease Rule.
Report unusual or increased case incidence of any suspect infectious illness immediately by telephone (651-201-5414 or 1-877-676-5414)

Goal: Break the chain of infection: Prevent infection and transmission of epidemiologically-important organisms, including those with transmission risks associated with long-term care:

Aspergillus species
Candida auris (drug-resistant fungus)
Carbapenem-resistant *Acinetobacter baumannii*
Carbapenem-resistant Enterobacterales (previously Enterobacteriaceae) (CRE)
Clostridioides difficile (aka. C. diff)
Extended-spectrum beta-lactamase (ESBL)-producing Enterobacterales
Group A Streptococcus
Influenza
Legionella pneumophila
Methicillin-resistant *Staphylococcus aureus* (MRSA)
Mycobacterium tuberculosis (TB)
Norovirus
Pseudomonas aeruginosa
Respiratory syncytial virus (RSV)
(SARS-CoV-2 (COVID 19) is not addressed)
Scabies
Streptococcus pneumoniae
Vancomycin-resistant *Enterococci* (VRE)

Step 2: Measure and analyze the current baseline

Identify the current state/ baseline status for outbreak practices, i.e., evidence of the IPC risk.
Determine if the facility has collected any audit data on the selected improvement opportunity.

Audit

1. Audit the documentation of communication processes that facilitate early detection and prompt implementation of prevention and management practices; consider calculating compliance percentages for the following communication processes:

a. Proportion of residents for whom an interfacility transfer form was completed on admission

b. Proportion of times a Situation-Background-Assessment-Request (SBAR) note was used to communicate a resident change in condition (nurse to clinician)

2. Determine availability of cleaning and disinfection products 1) *used by nursing* and 2) *used by EVS* (on environmental surfaces and reusable medical equipment in resident care and activity areas, common areas and nursing stations) with efficacy claims for common pathogens.

3. Track organism-specific outcome measures (Infection rate for [pathogen Z] from [time A] to [time B] on [X location (i.e., specific unit or facility-wide]). Select organism(s) and facility surveillance population(s) based on the risk assessment.
   a. Collect denominator data for the surveillance population.

   b. Collect numerator data. Consider using CDC's NHSN.

      i. Monitor the number and incidence rate (if multiple cases) for pathogens.

Review

1. Review audit data, look for trends and identify root causes for the successes and gaps.
2. Do HCW have the knowledge and skills to implement policies/procedures correctly?
   a. Recommended IPC competencies for HCW: Demonstrate ability to problem-solve and apply knowledge to recognize, contain, and prevent infection transmission; specifically:
      i. Explain how to access IPC resources including policies and procedures.
      ii. Discuss your own role in IPC (e.g., recognizing unsafe activities, intervening when breaches in infection control are identified).
      iii. Describe practice changes (e.g., altered standard of care) in the event of limited resources.
3. Are there environmental constraints to correctly implementing interventions?
4. Does the facility have outbreak protocols outlining recommended IPC measures for specific pathogens/clinical syndromes? Consider the investigation including the following:

   a. Verifying that an outbreak occurred

   b. Developing a case definition

   c. Case finding

   d. Analyzing the outbreak

   e. Hypothesizing the method of transmission

   f. Designating control measures

   g. Evaluating control measures

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric.

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff, QAPI committee), brainstorm action steps that will help decrease the IPC risk and meet the goal - refer to evidence-based recommendations. Consider the following:

What is one change in policy, protocol, operations, products, workflow, education, surveillance strategy, etc. to propose to the QAPI committee?

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

Step 6: Decision

Determine whether the intervention be adopted/adapted/abandoned in lieu of another strategy. Consider what you'll do if your process change works or doesn't work.

Illness cluster/outbreak control checklist

When the number of cases exceeds the normal baseline, a sudden cluster of infections on a unit or during a short period of time or a single case of a rare or serious infection occurs, an outbreak within the facility should be considered. IPC considerations:

Tracking

Begin a line list to organize illness location, onset dates, duration and outcomes, signs/ symptoms, lab data, case type (i.e., resident or staff) and observe for any epidemiological links by person, place or time among cases.

Communication/notification considerations

- ☐ Are appropriate clinicians aware?
- ☐ Do visitors/families need to be notified?
- ☐ Will visitation be impacted and if so, how will changes be communicated?
- ☐ Should MDH be notified? 651-201-5414 or 1-877-676-5414

System-level containment considerations

- ☐ Is negative airflow/airborne infection isolation room needed (i.e., is a resident transfer indicated)?
- ☐ Are disinfection products with efficacy claims for suspected/confirmed pathogens available?
- ☐ Will contact tracing be required?
- ☐ Will additional testing be required?
- ☐ Should admissions be paused?
- ☐ Will staff or residents need to be cohorted?
- ☐ What staff exclusion/return-to-work practices are in place?
- ☐ Do group activity, dining, common area socializing practices need to be modified?
- ☐ Is post-exposure prophylaxis for resident, HCW, other residents indicated?
    - Are standing orders, consents in place?

Resident-level containment

- ☐ Room placement: Can resident remain in current room or is a private room indicated?
- ☐ Dedicate reusable medical equipment for use on only the affected resident?
- ☐ Can secretions/excretions be contained if present?
- ☐ Appropriate PPE available at the point of use (e.g., multiple sizes of gloves and gowns?)
- ☐ Isolation precautions sign needed.
- ☐ Considerations for intra- and inter-facility resident transport?
- ☐ Is soap and water hand hygiene recommended?
    - Are portable sinks required?

Epidemiologically important organisms: Resources

Implementation resources

1. Johns Hopkins Medicine Toolkit to Enhance Nursing and Antibiotic Stewardship Partnership
2. CDC Core Elements of Antibiotic Stewardship – Core Elements of Antibiotic Stewardship for Nursing Homes
3. AHRQ Toolkit To Improve Antibiotic Use in Long-Term Care
4. Minnesota Sample Antibiotic Stewardship Policy for Long-Term Care Facilities
5. CDC Management of MDROs in Healthcare Settings Table 3. Tier 1. Routine Prevention and Control of MDROs in Healthcare Settings
6. CDC Implementation of Personal Protective Equipment (PPE) Use in Nursing Homes to Prevent Spread of Multidrug-resistant Organisms (MDROs) (EBP)
7. MDH: Guideline for the Management of Antimicrobial Resistant Organisms in MN LTCF
8. MDH Infection Prevention and Control Guidelines
9. Selected EPA-Registered Disinfectants
10. The CDC Field Epidemiology Manual – Healthcare Settings: Overview of Sequence of Steps Involved in an HAI Investigation
11. Isolation Precautions in LTCF for CDI (Clostridioides difficile infection)Resident Cohorts for Respiratory Outbreaks in Long-Term Care

Communication tools

1. SBAR Template for Physician/NP Communication
2. CDC Inter-Facility Infection Control Transfer Form

Surveillance tools

1. Worksheet: Denominators for LTCF
2. NHSN Long-term Care Facilities (LTCF) Component
3. MDH Norovirus/GI Information for LTCF- Resident Illness Log, Staff Illness Log and Illness Screening Form
4. MDH Long-Term Care Influenza-Like Illness Line List for LTCF

Training and education

1. CDC Module 4 – Infection Surveillance
2. CDC Nursing Home IP Training Course – Module 5: Outbreaks
3. SPICE Detecting and Responding to Outbreaks in LTCFs

Supporting articles

1. CDC Antibiotic Resistance Threats in the United States, 2019
2. Surveillance Definitions of Infections in Long-Term Care Facilities: Revisiting the McGeer Criteria
3. SHEA/APIC Guideline: Infection prevention and control in the long-term care facility
4. Lee, TB, Montgomery OG, Marx, J, Olmsted, RN, Scheckler, WE. Recommended practices for surveillance: APIC, Inc. *Am J Infect Control* 2007;35:427-40.
5. Carrico RM, Rebmann T, English JF, Mackey J, Cronin SN. Infection prevention and control competencies for hospital-based health care personnel. *Am J Infect Control*. 2008 Dec;36(10):691-701.

6. MDH Minnesota Action Plan for the Prevention of Healthcare-Associated Infections

Continuous improvement resources

Aspergillus

Figure 8. Image of *Aspergillus fumigatus*

"*Aspergillus* spp. are ubiquitous, aerobic fungi that occur in soil, water, and decaying vegetation; the organism also survives well in air, dust, and moisture present in health-care facilities … Site renovation and construction can disturb *Aspergillus*-contaminated dust and produce bursts of airborne fungal spores. Increased levels of atmospheric dust and fungal spores have been associated with clusters of health-care acquired infections in immunocompromised patients."[4]

Resources

1. CDC Clinical Overview of Aspergillosis
2. CDC Guidelines for Environmental Infection Control in Health-Care Facilities
3. MDH Infection Prevention and Control Resources for Managing Multidrug Resistant Organisms (MDROs)

[4] CDC Guidelines for Environmental Infection Control in Health-Care Facilities, p. 21

Candida auris (drug-resistant fungus)

Figure 9. Who is at risk for infection from *C. auris*? Per CDC: People who have recently spent time in nursing homes and have lines and tubes that go into their body (such as breathing tubes, feeding tubes and central venous catheters), seem to be at highest risk for *C. auris* infection.

Risk-based screening

Per CDC, strongly consider risk-based screening upon admission (i.e., for residents who have had an overnight stay in a healthcare facility outside the U.S. or in an area of high prevalence within the U.S. in the past year and have infection or colonization with carbapenemase-producing Gram-negative bacteria. *C. auris* co-colonization with these organisms has been observed regularly.)

Case or cluster identification

Per MDH: One case is a trigger for investigation and enhanced control measures. Report detection (infection or colonization) of either *C. auris* or *Candida* species that may be *C. auris*.

Precautions

Per CDC: Place patients with *C. auris* infection or colonization in a private room using Enhanced Barrier Precautions or Contact Precautions.

Environmental cleaning and disinfection

Per MDH: Disinfectants that are routinely used in the health care setting may not be effective against *C. auris*. Consult EPA List P for recommended products.

Resources

1. CDC General Information about *Candida auris*
2. CDC Fungal Diseases landing page
3. MDH *Candida auris* Information for Health Professionals: Case Definition, Required Reporting and Testing, and Infection Prevention Guidance
4. MDH Infection Prevention and Control Resources for Managing Multidrug Resistant Organisms (MDROs)

Carbapenem-resistant Enterobacterales (previously Enterobacteriaceae) (CRE)

Figure 10. Per CDC, CRE bacteria are a major concern for patients in healthcare facilities. Some Enterobacterales are resistant to nearly all antibiotics, leaving more toxic or less effective treatment options.

Risk-based screening

Per CDC, develop a system to assess whether a resident has received medical care somewhere else, including other facilities or other countries. Screen patients who have had an overnight stay in a healthcare facility outside the US in the prior six to 12 months for the presence of carbapenemase-producing (CP)-CRE.

Case or cluster identification

1. "A positive CRE result should be considered a critical value."
2. "If previously unrecognized carriers of epidemiologically important CRE, including CP-CRE, are identified, screening of patient contacts should be considered to identify transmission."

Precautions

See Implementation of PPE in Nursing Homes to Prevent Spread of Novel or Targeted MDROs and FAQs about Enhanced Barrier Precautions in Nursing Homes.

Environmental cleaning and disinfection

Focus on surfaces proximal to the resident and high-tough surfaces (e.g., bedrails, bedside commodes) in the resident's room. Use and EPA-registered cleaning/disinfection product; follow instructions for dilution, application, and contact time. Utilize resident-dedicated equipment and supplies when possible. Clean/disinfect re-useable equipment after use and prior to use by another resident.

Resources

1. MDH Recommendations for the Management of Carbapenem-Resistant Enterobacteriaceae in LTCF
2. CDC Healthcare-Associated Infections (HAIs)
3. MDH Infection Prevention and Control Resources for Managing Multidrug Resistant Organisms (MDROs)

Clostridioides difficile (aka *C. diff*)

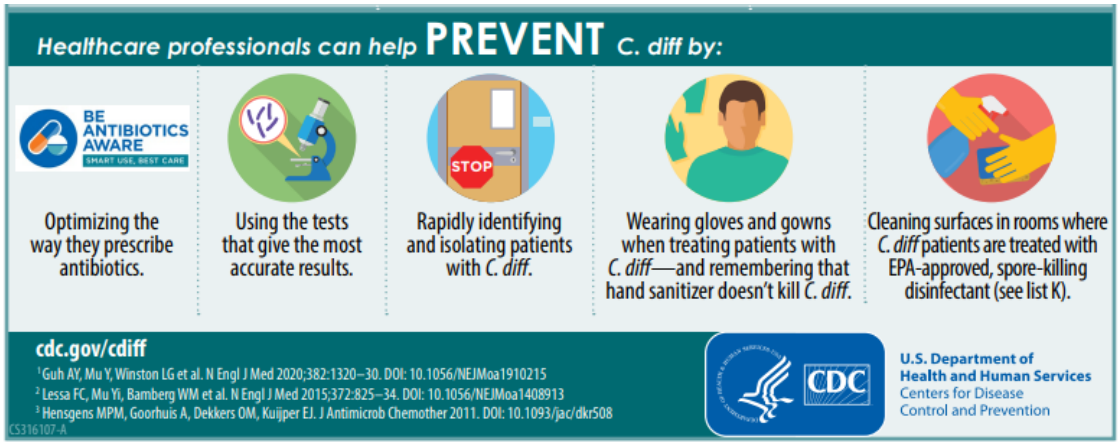


Figure 11. Excerpt of CDC infographic describing *C. diff* prevention measures

"*C. diff* produces spores when attacked by antibiotics. The spores can live in the open air or in dirt for up to two years. Normal disinfectants are not effective against the spores. This means that even if you kill the *C. diff* bacteria, spores can still be present…"[5]

Case or cluster identification

If a patient has had three or more stools in 24 hours: Order a *C. diff* test if other etiologies of diarrhea (e.g., stool softener or laxative use) are considered unlikely.

Precautions

1. Isolate patients with possible *C. diff* immediately, even if you only suspect infection.
2. Wear gloves and a gown when treating patients with *C. diff*, even during short visits. Gloves are important because hand sanitizer doesn't kill *C. diff* and handwashing might not be sufficient alone to eliminate all *C. diff* spores. Removing the gloves allows you to remove spores that may have been clinging to the surface of the gloves. Always perform hand hygiene immediately after glove removal.

Environmental cleaning and disinfection

1. Ensure adequate cleaning and disinfection of environmental surfaces and reusable devices, especially items likely to be contaminated with feces and surfaces that are touched frequently.
2. Use and EPA-registered disinfectant with a sporicidal claim for environmental surface disinfection after cleaning in accordance with label instructions.

Resources

1. MDH *C. difficile* Toolkit for LTCF (includes sample policy and response algorithm)
2. MDH Example *Clostridioides difficile* Infection (CDI) Prevention and Control Policy (Word)
3. Additional acute gastroenteritis cluster/outbreak **tracking resources available**

[5] APIC *What Patients Need to Know About Clostridioides difficile (C. diff) Infection (CDI)*

4. CDC Infection Control Basics
5. MDH Project Firstline Training and Resources
6. APIC *Guide to Preventing* Clostridium difficile *Infections (2013)*
7. APIC *What Patients Need to Know About Clostridioides difficile (C. diff) Infection (CDI)*
8. CDC *C. diff: Facts for Clinicians*
9. MDH Isolation Precautions in LTCF for CDI (*Clostridioides difficile* infection)

Norovirus

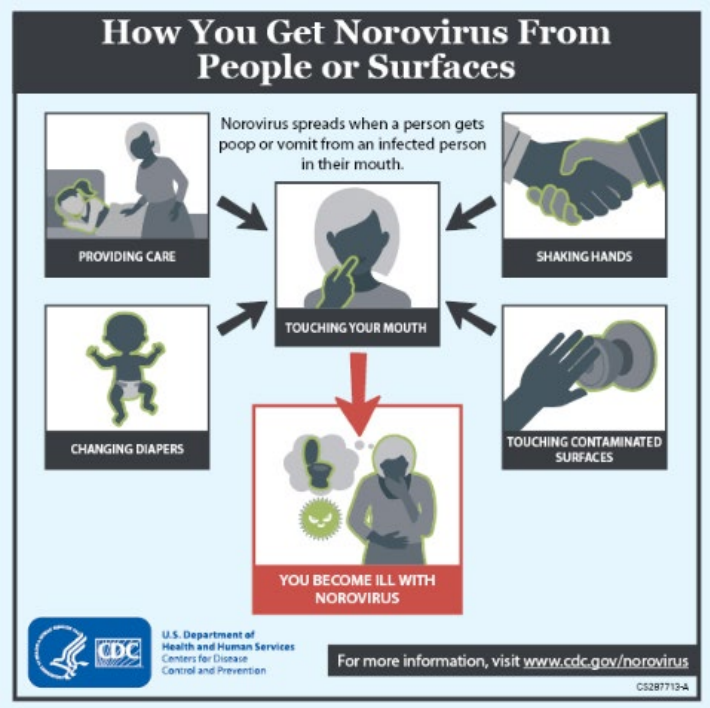


Figure 12. How You Get Norovirus From People or Surfaces

Case or cluster identification

CDC responding to norovirus outbreaks (includes case definition)

Precautions

If norovirus infection is suspected, adherence to PPE use according to Contact and Standard Precautions is recommended for individuals entering the patient care area (i.e., gowns and gloves upon entry) to reduce the likelihood of exposure to infectious vomitus or fecal material. Use a surgical or procedure mask and eye protection or a face shield that covers the entire face if there is an anticipated risk of splashes to the face during the care of patients, particularly among those who are vomiting.

Environmental cleaning and disinfection

EPA List G: Antimicrobial Products Registered with EPA for Claims Against Norovirus

Resources

1. MDH 2021-2022 Norovirus Information for LTCF
2. MDH Resident GI Illness Log and Staff GI Illness Log
3. CDC Key Infection Control Recommendations for the Control of Norovirus Outbreaks in Healthcare Settings
4. CDC Norovirus Prevention and Control Guidelines for Healthcare Settings

Carbapenem-resistant *Acinetobacter baumannii*

Figure 13. Per CDC, Acinetobacter bacteria causes pneumonia and wound, bloodstream, and urinary tract infection. Nearly all infections happen in patients who recently received care in a healthcare facility.

About Acinetobacter can live for long periods of time on environmental surfaces and shared equipment if they are not properly cleaned. The germs can spread from one person to another through contact with these contaminated surfaces or equipment or though person-to-person spread, often via contaminated hands.[6]

Resources

1. CDC About Acinetobacter
2. MDH Infection Prevention and Control Resources for Managing Multidrug Resistant Organisms (MDROs)

[6] CDC About Acinetobacter

Extended-spectrum beta-lactamase (ESBL)-producing Enterobacterales

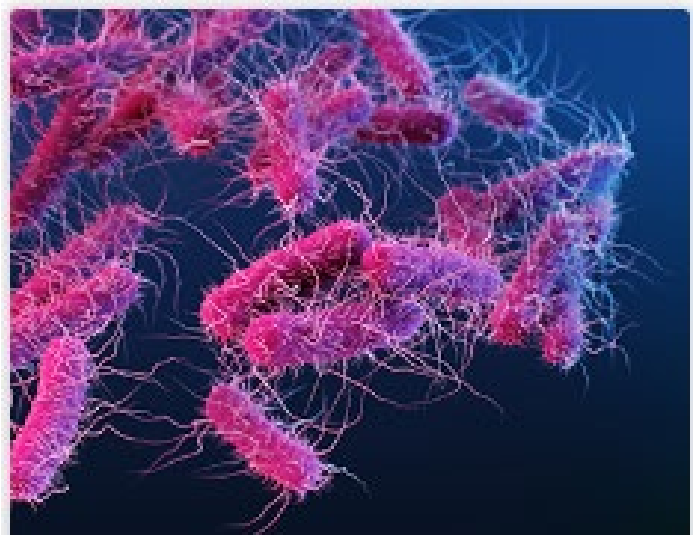


Figure 14. Per CDC, ESBL-producing Enterobacterales are a concern in healthcare settings and the community. They can spread rapidly and cause or complicate infections in healthy people. ESBLs are enzymes that make commonly used antibiotics ineffective.

Precautions

CDC Implementation of PPE Use in Nursing Homes to Prevent Spread of MDROs

Resources

1. CDC About ESBL-producing Enterobacterales
2. MDH Infection Prevention and Control Resources for Managing Multidrug Resistant Organisms

Methicillin-resistant *Staphylococcus aureus* (MRSA)

Figure 15. Per CDC, *S. aureus* are common bacteria that spread in healthcare facilities and the community. MRSA can cause difficult to treat staph infections because of resistance to some antibiotics.

Precautions

CDC Implementation of PPE Use in Nursing Homes to Prevent Spread of MDROs

Environmental cleaning and disinfection

EPA List H: EPA's Registered Antimicrobial Products Effective Against MRSA and/or VRE

Resources

1. APIC Guide to the Elimination of MRSA in the LTCF – Includes a MRSA risk assessment
2. MDH MRSA Guidelines and Resources
3. CDC Clinical Overview of Methicillin-resistant Staphylococcus aureus (MRSA) in Healthcare Settings
4. AHRQ Safety Program for MRSA Prevention
5. MDH Infection Prevention and Control Resources for Managing Multidrug Resistant Organisms

Vancomycin-resistant Enterococci (VRE)

Figure 16. Per CDC, Enterococci bacteria can cause serious infections for patients in healthcare settings, including bloodstream, surgical site and urinary tract infections

Precautions

CDC Implementation of PPE Use in Nursing Homes to Prevent Spread of MDROs

Environmental cleaning and disinfection

EPA List H: EPA's Registered Antimicrobial Products Effective Against MRSA and/or VRE

Resources

1. CDC Vancomycin-resistant Enterococci (VRE) Basics
2. MDH Infection Prevention and Control Resources for Managing Multidrug Resistant Organisms

Pseudomonas aeruginosa

Figure 17. Per CDC, *P. aeruginosa* bacteria usually cause infections in people with weakened immune systems. It can be particularly dangerous for patients with chronic lung diseases.

Precautions

CDC Implementation of PPE Use in Nursing Homes to Prevent Spread of MDROs

Environmental cleaning and disinfection

"Healthcare facilities should have water management plans (see Reduce Risk from Water) that help ensure water quality and reduce the risk of exposure to potentially harmful germs like *Pseudomonas aeruginosa*."[7]

Resources

1. CDC About Pseudomonas aeruginosa
2. MDH Infection Prevention and Control Resources for Managing Multidrug Resistant Organisms

[7] CDC About Pseudomonas aeruginosa

Legionella pneumophila

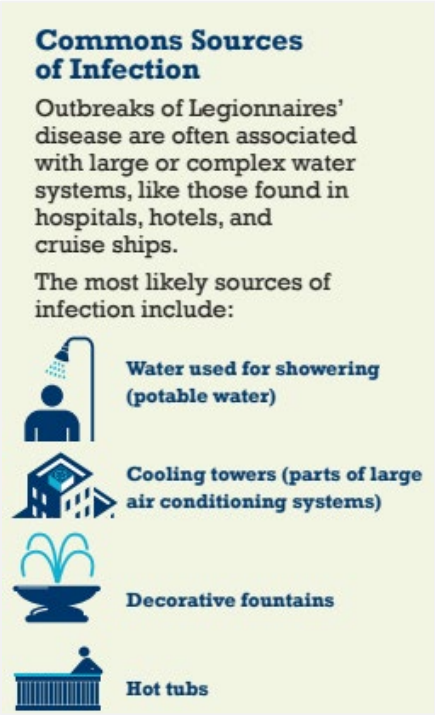


Figure 18. Source: CDC

Case or cluster identification

A single case of Legionella may signal colonization of the water supply and should trigger an investigation.[8]

Precautions

In general, people do not spread Legionnaires' disease to other people.

Environmental cleaning and disinfection

In nature, *Legionella* live in fresh water and rarely cause illness. In man-made settings, *Legionella* can grow if water is not properly maintained. These manmade water sources become a health problem when small droplets of water that contain the bacteria get into the air and people breathe them in. In rare cases, someone breathes in *Legionella* while they are drinking water and it "goes down the wrong pipe" into the lungs.

Resources

1. CDC About Legionella Control
2. CDC Legionnaires' Disease

[8] Smith, PW, et al. SHEA/APIC Guideline: IPC in the LTCF. *Infection Control and Hospital Epidemiology*; 2008:29(9).

3. Smith, PW, et al. SHEA/APIC Guideline: IPC in the LTCF. Infection Control and Hospital Epidemiology; 2008:29(9).

Streptococcus pneumoniae (pneumococcal disease)

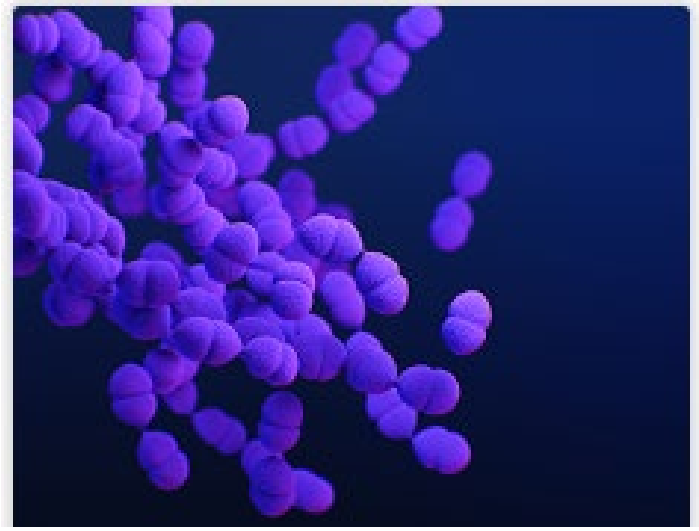


Figure 19. Per CDC, *S. pneumoniae* bacteria cause pneumococcal disease (also called pneumococcus), which can range from ear and sinus infections to pneumonia and bloodstream infections.

Resources

1. CDC Nursing Home IP Training Course – Module 12A: Preventing Bacterial Respiratory Infection
2. MDH Pneumococcal Information for Health Professionals
3. CDC Pneumococcal Vaccination: Information for Healthcare Professionals
4. Long-Term Care IP Coalition of Hennepin County Mystery Illness Exercise

Group A Streptococcus (GAS)

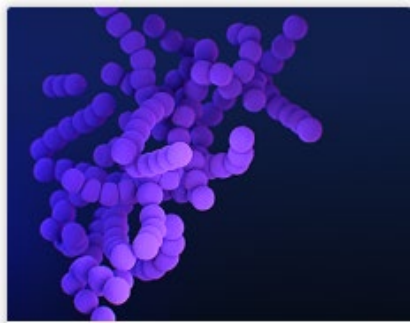


Figure 20. Per CDC, GAS bacteria can cause many different infections that range from minor illnesses to serious and deadly diseases, including strep throat, pneumonia, flesh-eating infections, and sepsis.

Case or cluster identification

1. Reporting Streptococcal Disease: All invasive streptococcal disease caused by GAS must be reported to MDH within one working day.
2. "If a case of invasive GAS is identified in a resident at your facility, MDH recommends heightened vigilance for other GAS infections in staff and residents. This may include reviewing previous infections and requesting cultures for current infections as well as inquiring about strep throat and skin infections among residents and staff."[9]

Precautions

"If residents are diagnosed with GAS, they should be confined to their rooms for 24 hours after taking their first dose of antibiotics. When caring for a resident with GAS, staff must wash hands with soap and water or use an alcohol-based hand sanitizer before and after resident contact. Staff must follow appropriate infection prevention precautions including contact and droplet precautions [in addition to Standard Precautions] depending on the residents' symptoms and diagnosis. Staff can also keep wounds clean and watch for signs of infection such as redness swelling, drainage, and pain."[10]

Resources

1. MDH Invasive Group A Streptococcus (GAS) in Long-Term Care Facilities
2. Colorado Department of Public Health and Environment GAS Infections in LTCF FAQs

[9] MDH Invasive Group A Streptococcus (GAS) in Long-Term Care Facilities
[10] Ibid

Tuberculosis (TB)

Figure 21. Per CDC, Tuberculosis (TB) is caused by the bacteria Mycobacterium tuberculosis. It is a common infectious disease that frequently causes death worldwide. TB can be resistant to more than one antibiotic used to treat it.

Case or cluster identification

"For TB, an outbreak investigation should be triggered by a single active case. TB outbreaks are often caused by a single case and may infect large numbers of residents and staff by the airborne route before detection."[11]

Environmental cleaning and disinfection

1. EPA List B: Antimicrobial Products Registered with EPA for Claims Against Mycobacterium tuberculosis
2. EPA List E: EPA's Registered Antimicrobial Products Effective Against Mycobacterium tuberculosis, Human HIV-1 and Hepatitis B Virus

Resources

1. CDC Nursing Home IP Training Course – Module 12B: Tuberculosis Prevention
2. CDC Module 12B -Tuberculosis Prevention
3. CDC Clinical Testing Guidance for Tuberculosis: Health Care Personnel
4. CDC Guidelines for Environmental Infection Control in Health-Care Facilities
5. CDC Tuberculosis Screening, Testing, and Treatment of U.S. Health Care Personnel: Recommendations from the National Tuberculosis Controllers Association and CDC, 2019
6. Morbidity and Mortality Weekly Report summary
7. MDH TB Information for Health Professionals (includes training resources)
8. Use TB risk assessment for summarizing detailed incidence data

[11] Smith, PW, et al. SHEA/APIC Guideline: IPC in the LTCF. *Infection Control and Hospital Epidemiology*; 2008:29(9).

Influenza

Figure 22. Influenza virus image
Source: CDC Public Health Image Library

Case or cluster identification

"…If one laboratory-confirmed influenza positive case is identified along with other cases of acute respiratory illness in a unit of a long-term care facility, an influenza outbreak might be occurring. Active surveillance for additional cases should be implemented as soon as possible once one case of laboratory-confirmed influenza is identified in a facility. When two cases of laboratory-confirmed influenza are identified within 72 hours of each other in residents on the same unit, outbreak control measures should be implemented as soon as possible."[12]

Precautions

Implement Standard and Droplet Precautions for all residents with suspected or confirmed influenza for seven days after illness onset or until 24 hours after the resolution of fever and respiratory symptoms, whichever is longer, while a resident is in a healthcare facility.[13]

Environmental cleaning and disinfection

CDC Infection Prevention and Control Strategies for Seasonal Influenza in Healthcare Settings

Resources

1. CDC Nursing Home IP Training Course – Module 12C: Preventing Viral Respiratory Infection
2. CDC Testing and Management Considerations for Nursing Home Residents
3. MDH Interim Guidance for Influenza Outbreak Management in LTCF
   a. MDH Influenza-Like Illness Line List
4. IDSA Clinical Practice Guidelines by the Infectious Diseases Society of America: 2018 Update on Diagnosis, Treatment, Chemoprophylaxis, and Institutional Outbreak Management of Seasonal Influenza

[12] CDC Interim Guidance for Influenza Outbreak Management in Long-Term Care and Post-Acute Care Facilities
[13] Ibid

5. SHEA Position Paper: Influenza Vaccination of Healthcare Personnel

Respiratory syncytial virus (RSV)

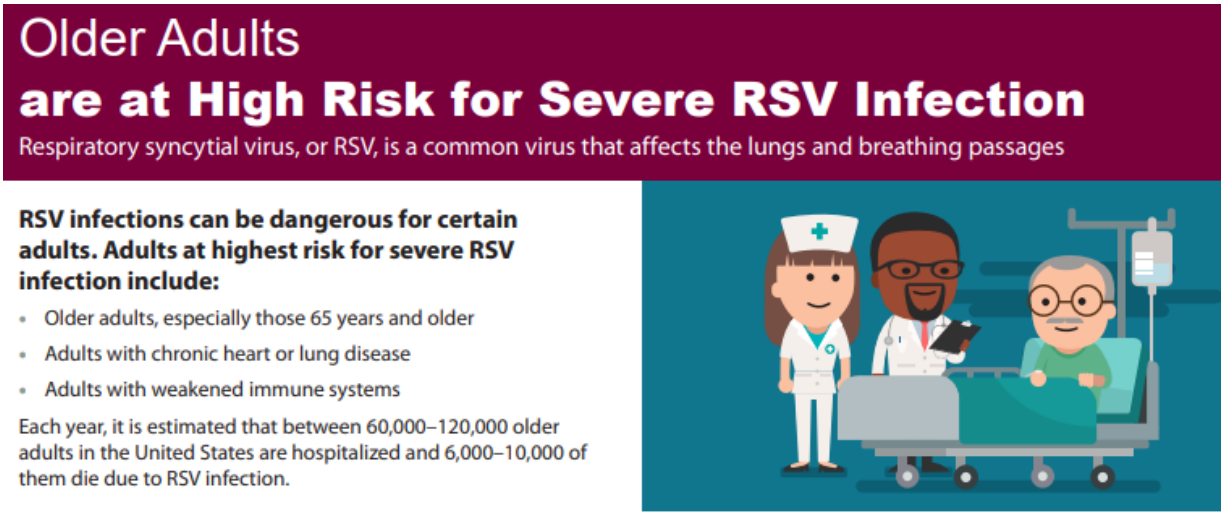


Figure 23. Source: CDC

Case or cluster identification

CDC Clinical Overview of RSV

Precautions

CDC Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (2007) – Appendix A. Type and Duration of Precautions Recommended for Selected Infections and Conditions.

Environmental cleaning and disinfection

"RSV can survive for many hours on hard surfaces such as tables and crib rails. It typically lives on soft surfaces such as tissues and hands for shorter amounts of time."[14]

Resources

1. CDC Vaccination information
2. Colorado Department of Public Health and Environment Guidance for Prevention and Control of RSV Outbreaks in Long-Term Care Facilities

[14] CDC How RSV Spreads

Scabies

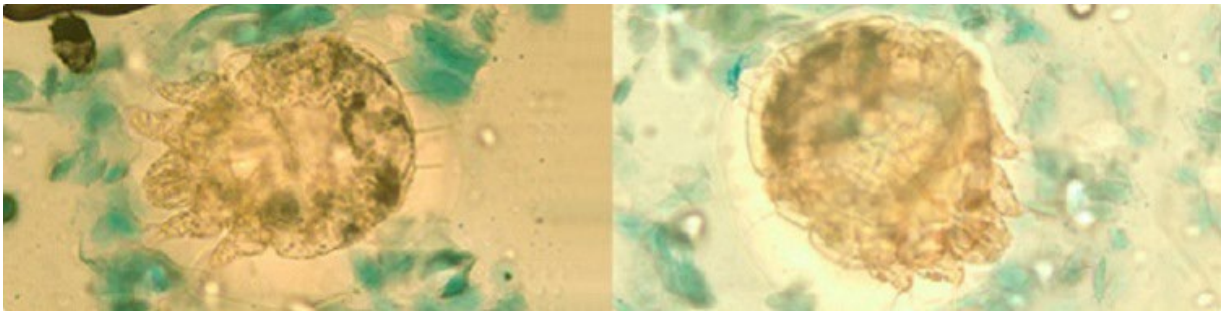


Figure 24. Source: CDC

Note that CDC provides recommendations for non-crusted scabies and crusted (Norwegian) scabies.

Case or cluster identification

A single case of scabies should trigger an evaluation.

Precautions

CDC Scabies Prevention and Control

Resources

1. CDC About Scabies
2. CDC Public Health Strategies for Crusted Scabies Outbreaks in Institutional Settings
3. County of Los Angeles Public Health Scabies Prevention and Control Guidelines in Healthcare Settings
4. Colorado Department of Public Health and Environment Guidelines for Investigation and Management of Scabies
5. California Department of Public Health Scabies Control and Prevention slide deck

Device and Procedure Infection Prevention

Indwelling urethral catheters

Step 1: Clinical leadership and QAPI committee, in collaboration with IP, select an improvement opportunity

How is the facility reducing risk factors for biofilm formation and minimizing opportunities for organisms to bypass the body's natural defenses?

"Indwelling urinary catheters quickly become colonized with microorganisms after insertion. These microorganisms produce proteins and other substances that are sticky and facilitate the formation of biofilms. These biofilms make it impossible to eradicate the bacteria even with antibiotics."[15]

Goal: Prevent unnecessary invasive device use to limit pathogen portals of entry into the body and surfaces for biofilm formation.

Step 2: Measure and analyze the current baseline

Assess the current state of indwelling urethral catheter practices, i.e., evidence of the IPC risk. Determine if the facility has collected any audit data on the selected improvement opportunity.

Audit

1. Audit HCW adherence to best practices for three to six months to establish a baseline. Note the difference between auditing (i.e., observing to determine practice compliance) and competency (i.e., HCW returning a demonstration of a skill as a part of education).
    a. Summary of Recommendations from the Guideline for Prevention of Catheter-Associated Urinary Tract Infections (2009)..
        i. # of residents each day who have an appropriate indication for use of an invasive device divided by # of invasive device days (# of days residents have an invasive device (catheter) inserted. Multiply by 100 to get a percentage.
    b. Consider daily assessments for device discontinuation appropriateness
    c. Adherence to Priority Recommendations for Proper Urinary Catheter Maintenance.
        i. # of device insertions and/or maintenance care practices performed per facility policy divided by the # of opportunities for device insertions and/or maintenance care practices to be performed by facility policy. Multiply by 100 to get a compliance percentage.
        ii. Checklists available: insertion practices and maintenance cares
    d. Develop a process to collect outcome data and the infection rate of catheter-associated urinary tract infections (CAUTI)

[15] CDC Indwelling Urinary Catheter Culture Stewardship: Overview

i. Collect the denominator data: For each day of the month, at the same time each day, record the number of residents who have an indwelling urinary catheter in place (i.e., device days). At the end of the surveillance period (e.g., month), sum the daily counts.
ii. Collect numerator data (i.e., the number of CAUTIs in the infection rate calculation) for the surveillance population.
iii. Determine which cues will alert you to review a resident's chart to determine if a resident's constellation of signs, symptoms, lab results, etc. meet Revised McGeer surveillance criteria for an infection.
    1. Note the differenct between clinical infection and surveillance definition of infection.
    2. Consider a review when any of the following are present: change in resident condition, new microbiology reports, antibiotic starts, etc.

Review

1. Review audit data and look for trends. Identify root causes for the successes and gaps.

    a. Do HCW see facility leadership making CAUTI prevention a priority?

    b. Do facility policies/procedures clearly communicate expectations and align with best practice recommendations?

    c. Do HCW have the knowledge and skills to aseptically insert catheters?

    d. Do environmental factors make it easy to follow best practice recommendations (e.g., availability of pre-packaged sterile insertion kits, ABHS accessibility, space to set up a sterile field)?

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric.

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff), brainstorm action steps that will help decrease the IPC risk and meet the goal – refer to evidence-based recommendations. Consider the following questions:

> What is one change in policy, protocol, operations, products, workflow, education, surveillance, strategy, etc. to propose to the QAPI committee?

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

Step 6: Decision

Determine whether the intervention should be adopted/adapted/abandoned in lieu of another strategy. Consider what you'll do if your process change works or doesn't work.

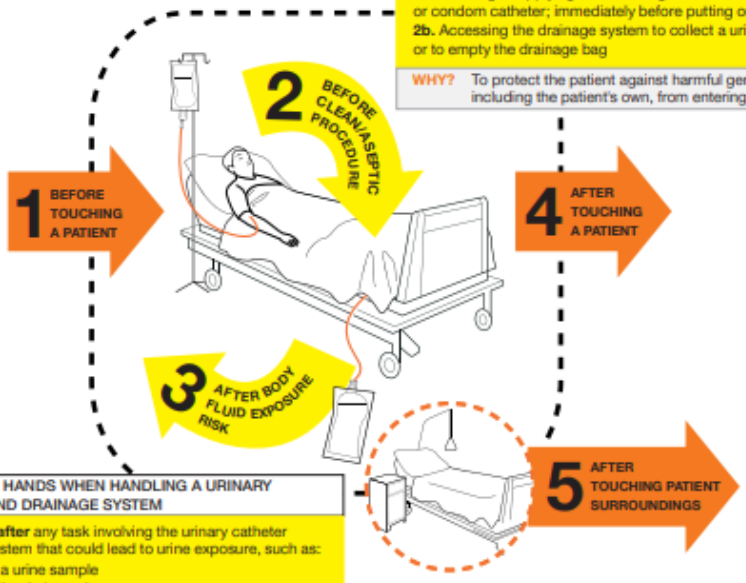
My 5 Moments for Hand Hygiene

Focus on caring for a patient with a Urinary Catheter

CLEAN YOUR HANDS WHEN HANDLING A URINARY CATHETER AND DRAINAGE SYSTEM

Immediately before any manipulation of the urinary catheter or drainage system that could lead to contamination of the sterile urine, such as:
2a. Inserting or applying an indwelling, intermittent straight, or condom catheter; immediately before putting on sterile gloves
2b. Accessing the drainage system to collect a urine sample or to empty the drainage bag

WHY? To protect the patient against harmful germs, including the patient's own, from entering his/her body.



CLEAN YOUR HANDS WHEN HANDLING A URINARY CATHETER AND DRAINAGE SYSTEM

Immediately after any task involving the urinary catheter or drainage system that could lead to urine exposure, such as:
3a. Collecting a urine sample
3b. Emptying the drainage bag
3c. Removing the urinary catheter

WHY? To protect yourself and the health-care environment from harmful patient germs.

5 KEY ADDITIONAL CONSIDERATIONS FOR A PATIENT WITH A URINARY CATHETER

- Make sure that there is an appropriate indication for the indwelling urinary catheter.
- Use a closed urinary drainage system, and keep it closed.
- Insert the catheter aseptically using sterile gloves.
- Assess the patient at least daily to determine whether the catheter is still necessary.
- Patients with indwelling urinary catheters do not need antibiotics (including for asymptomatic bacteriuria), unless they have a documented infection.

World Health Organization | **SAVE LIVES** Clean Your Hands | No Action Today No Cure Tomorrow

Central venous catheters

Step 1: Clinical leadership and QAPI committee, in collaboration with IP, select an improvement opportunity

Goal: Prevent central line-associated bloodstream infection (CLABSI).

Step 2: Measure the current baseline

Identify the current state/baseline status for antibiotic stewardship practices, i.e., evidence of the IPC risk. Determine if the facility has collected any audit data on the selected improvement opportunity.

Audit

Audit HCW adherence to central line insertion and maintenance best practices for three to six months to establish a baseline.

Review

1. Review audit data and look for trends. Identify root causes for the successes and gaps.
2. Do facility policies/procedures clearly communicate expectations and align with best practice recommendations?
3. Do HCW have the knowledge and skills to aseptically insert catheters?

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric.

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff), brainstorm action steps that will help decrease the IPC risk and meet the goal – refer to evidence-based recommendations. Consider the following questions:

- ☐ What is one change in policy, protocol, operations, products, workflow, education, surveillance, strategy, etc. to propose to the QAPI committee?

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

Step 6: Decision

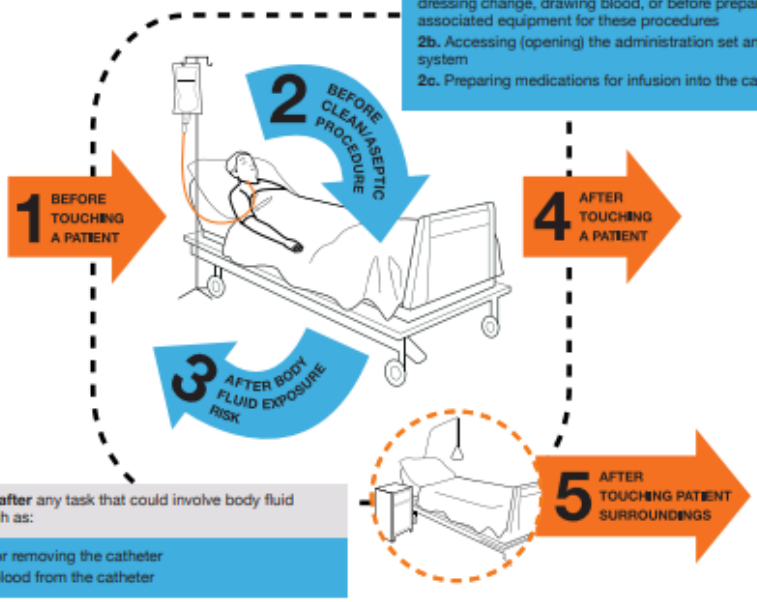
Determine whether the intervention should be adopted/adapted/abandoned in lieu of another strategy. Consider what you'll do if your process change works or doesn't work.

My 5 Moments for Hand Hygiene

Focus on caring for a patient with a central venous catheter

Immediately before any manipulation of the catheter and the associated intravenous medication administration system, such as:

2a. Catheter insertion (before putting on sterile gloves), catheter removal (before putting on clean, non-sterile gloves), dressing change, drawing blood, or before preparing associated equipment for these procedures
2b. Accessing (opening) the administration set and infusion system
2c. Preparing medications for infusion into the catheter



Immediately after any task that could involve body fluid exposure, such as:

3a. Inserting or removing the catheter
3b. Drawing blood from the catheter

Key additional considerations for central intravenous catheters

1. Indication: Ensure that a central intravenous catheter is indicated. Remove the catheter when no longer needed/clinically indicated.
2. Insertion/maintenance/removal
2.1 Avoid inserting catheters into the femoral vein.
2.2 Prepare clean skin with an antiseptic (alcohol-based 2% chlorhexidine-gluconate preferred) before insertion.
2.3 Use full sterile barrier precautions during insertion (cap, surgical mask, sterile gloves, sterile gown, large sterile drape).
2.4 Replace gauze-type dressings every 2 days and transparent dressings every 7 days; replace dressings whenever visibly soiled.
2.5 Change tubing used to administer blood, blood products, chemotherapy, and fat emulsions within 24 hours of infusion start. Consider changing all other tubing every 96 hours.
2.6 Use aseptic procedure (with non-touch technique) for all catheter manipulations.
2.7 "Scrub the hub" with alcohol-based chlorhexidine-gluconate for at least 15 seconds.
3. Monitoring: Record time and date of catheter insertion, removal and dressing change, and condition (visual appearance) of the catheter skin site every day.

World Health Organization | SAVE LIVES Clean Your Hands | Clean Care is Safer Care 2005-2015

Device and Procedure Infection Prevention: Resources

Indwelling urethral catheters

Guidelines and recommendations

1. CDC Catheter-Associated Urinary Tract Infections (CAUTI) Prevention Guideline
2. CDC Indwelling Urinary Catheter Culture Stewardship: Overview
3. CDC Healthcare-Associated Infections (HAIs)
4. AHRQ Prevent Catheter Associated Urinary Tract Infection
5. APIC Guide to Preventing CAUTI (2014) (includes CAUTI risk assessment – Section 3)
6. NHSN Urinary Tract Infection (Catheter-Associated Urinary Tract Infection [CAUTI] and Non-Catheter-Associated Urinary Tract Infection [UTI]) Events
7. MDH Loeb and McGeer Criteria: A Practical Guide for Use in Long-term Care

Tools

1. CDC Quick Observation Tool – Urinary Catheter
2. American Nurses Association Streamlined Evidence-Based RN Tool: CAUTI Prevention
3. CDC Module 10A - Indwelling Urinary Catheters
4. NHSN Denominators for LTCF

Supporting articles

1. IDSA Clinical Practice Guideline for the Management of Asymptomatic Bacteriuria: 2019 Update by the Infectious Diseases Society of America
2. IDSA Reliability of nonlocalizing signs and symptoms as indicators of the presence of infection in nursing home residents (Endorsed)

Central venous catheters

Guidelines and recommendations

1. CDC Central Line-associated Bloodstream Infection (CLABSI) Basics
2. CDC Intravascular Catheter-Related Infections (2011)
3. APIC Guide to Preventing Central Line-Associated Bloodstream Infections

Tools

1. CDC Central Venous Catheter Quick Observation Tool
2. AHRQ Central Line Insertion Care Team Checklist

Education

1. CDC Nursing Home IP Training Course – Module 10B: Central Venous Catheters
2. CDC Infection Control Basics

Ventilators

1. California Department of Public Health HAI Program – Ventilator-equipped Skilled Nursing Facility (vSNF) Quality Improvement Project

Dialysis

Guidelines and recommendations

1. CMS regulations §483.25(l) Dialysis.
2. APIC: Infection Prevention and Control in Dialysis Settings (2022)
3. CDC Infections and Patients on Dialysis
4. CDC Best Practices for Bloodstream Infection Prevention in Dialysis Setting
5. AHRQ Safety Program for End-Stage Renal Disease Facilities - Toolkit
6. CDC: Guidelines for Environmental Infection Control in Health-Care Facilities: Recommendations of CDC and the HICPAC Recommendations on Water, including Dialysis Water Quality and Dialysate
7. CDC Dialysis brochure

Education

1. CDC Clean Hands Count: Dialysis Care Brochure
2. Wyoming Department of Health Infection Prevention Orientation Manual Section 13: Current Infection Prevention Issues in Dialysis
3. CDC Tune in to Safe Healthcare: A CDC Webinar Series

Wound Care

Guidelines and recommendations

1. MDH Wound Care Infection Prevention Recommendations for Long-Term Care Facilities
2. AHRQ Safety Program for Nursing Homes: On-Time Prevention - Pressure Ulcer Prevention and Healing

Education

1. CDC Nursing Home IP Training Course – Module 10C: Infection Prevention During Wound Care

Tools

1. UNC SPICE Wound Care Observation Tool
2. Pennsylvania Department of Health Wound Care Observation Checklist for Infection Control
3. CDC Module 10C: Infection Prevention during Wound Care

Continuous improvement resources

Occupational Health

HCW protection from acquiring infection

Step 1: Clinical leadership and QAPI committee, in collaboration with IP, select an improvement opportunity

How is the facility monitoring HCW adherence to occupational health practices?

Goal: Ensure HCW can describe occupational health practices that protect the HCW from acquiring infection.

Step 2: Measure the current baseline

Identify the current state/baseline status for occupational health practices, i.e., evidence of the IPC risk.

Determine if the facility has collected any audit data on the selected improvement opportunity.

Audit

Assess HCW's competency in completing the following objectives:

1. Demonstrate safe handling and disposal of sharps.
2. Demonstrate appropriate use of safety devices.
3. Explain methods to safely handle blood and body fluids to prevent exposure.
4. Describe the first aid for cut/puncture exposures, or fluid exposures to the eyes, nose or mouth.
5. Articulate the process for reporting blood/body fluid exposure in the workplace.
6. Describe appropriate disposal of items soaked/saturated with blood/body fluids or other potentially infectious materials.
7. Describe regulated waste vs. general trash and the appropriate disposal of each.

Review

1. Review current facility occupational health competencies and update as needed.

2. Calculate the proportion of current employees with completed competencies that address objectives above.

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric.

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff), brainstorm action steps that will help decrease the IPC risk and meet the goal – refer to evidence-based recommendations. Consider the following questions:

> What is one change in policy, protocol, operations, products, workflow, education, surveillance, strategy, etc. to propose to the QAPI committee?

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

Step 6: Decision

Determine whether the intervention should be adopted/adapted/abandoned in lieu of another strategy. Consider what you'll do if your process change works or doesn't work.

HCW infection transmission prevention

Step 1: Clinical leadership and QAPI committee, in collaboration with IP, select an improvement opportunity

Goal: Ensure HCW can describe occupational health practices that prevent the HCW from transmitting infection to a resident.

Step 2: Measure the current baseline

Identify the current state/baseline status for occupational health practices, i.e., evidence of the IPC risk. Determine if the facility has collected any audit data on the selected improvement opportunity.

Audit

Assess HCW's competency in completing the following objectives:

1. Describe work practices that reduce the risk of infection transmission (e.g., immunization, not coming to work sick, hand hygiene).
2. Explain the importance of HCW participation in immunization programs.
3. Describe how a staff member with an infectious condition can pose a risk to other HCW, residents, and visitors.
4. Describe signs, symptoms and diagnoses that require absence from work or work restrictions (e.g., fever with cough, fever with skin rash/lesion, fever with other respiratory symptoms, gastrointestinal symptoms).

Review

1. Review current facility occupational health competencies and update as needed.
2. Calculate the proportion of current employees with completed competencies that address objectives above.

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric.

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff), brainstorm action steps that will help decrease the IPC risk and meet the goal – refer to evidence-based recommendations. Consider the following questions:

> What is one change in policy, protocol, operations, products, workflow, education, surveillance, strategy, etc. to propose to the QAPI committee?

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

Step 6: Decision

Determine whether the intervention should be adopted/adapted/abandoned in lieu of another strategy. Consider what you'll do if your process change works or doesn't work.

Occupational Health: Resources

Guidelines and recommendations

1. CDC Infrastructure and Routine Practices for Occupational IPC Services (2019)
2. CDC Core Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings – Occupational Health
3. CDC Infection Control in Healthcare Personnel: Epidemiology and Control of Selected Infections Transmitted Among Healthcare Personnel and Patients (updated March 28, 2024)
4. Occupational Safety and Health Administration – Healthcare

Education

1. CDC Nursing Home IP Training Course – Module 13: Occupational Health Considerations for the IPC Program

Vaccines

1. CDC's Occupational Infection Prevention and Control Services (2019) Immunization Programs recommendations
2. CDC immunization schedule: Adult Immunization Schedule by Medical Condition and Other Indication, 2022
   a. CDC PneumoRecs VaxAdvisor App for Vaccine Providers
   b. CDC About Shingles (Herpes Zoster)
   c. CDC Diphtheria, Tetanus, and Pertussis Vaccine Recommendations
3. MDH Recommended Vaccines for Health Care Personnel.
   a. MDH Vaccines for Adults
4. CDC web-based immunization training course, You Call the Shots (CE available)

Toolkits and templates

1. Immunization Action Coalition Standing Orders Templates for Administering Vaccines

Supporting article

1. Carrico RM, Rebmann T, English JF, Mackey J, Cronin SN. Infection prevention and control competencies for hospital-based health care personnel. *Am J Infect Control*. 2008 Dec;36(10):691-701

Continuous improvement resources

Environment of care

Cleaning/disinfecting reusable medical equipment

Step 1: Environmental services (EVS) leadership and QAPI committee, in collaboration with IP, select an improvement opportunity

Can HCW – nursing and EVS staff – describe who cleans and disinfects what when and with which product?

EVS is the first line of defense against germs – this is infection prevention and control! Your job makes a difference for everyone.

Goal: Standardize cleaning and disinfection processes for reusable medical equipment (RME) and environmental surfaces.

Step 2: Measure the current baseline

Identify the current state/baseline status for cleaning and disinfecting RME, i.e., evidence of the IPC risk. Determine if the facility has collected any audit data on the selected improvement opportunity.

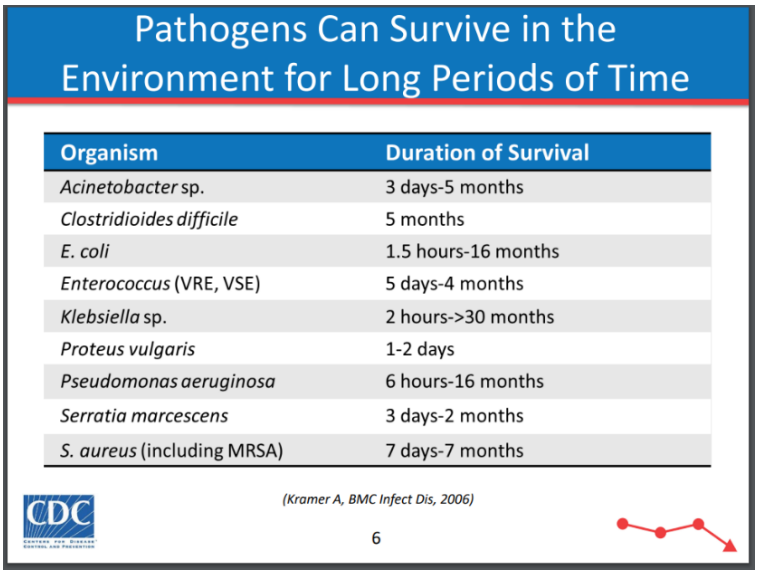


Figure 25 Source: CDC/Health Research and Educational Trust/States Targeting Reduction in Infections via Engagement presentation: Environmental Cleaning and Disinfection: Principles of Infection Transmission and the Role of the Environment, slide 6.

Audit

Audit HCW adherence to best practices for three to six months to establish a baseline.

1. Calculate HCW adherence to recommended practices and facility expectations.

Review

Review audit data and look for trends. Identify root causes for the successes and gaps.

1. Do facility policies/procedures clearly communicate expectations and align with best practice recommendations?
2. Do HCW have the knowledge and skills to implement cleaning and disinfecting processes? Recommended IPC competencies for HCW: Describe how microorganisms are transmitted in healthcare settings; specifically:

   a. Describe the role the environment plays in microorganism transmission in health care settings.

   b. Distinguish between clean, disinfected, and sterile patient care items.

3. Do environmental factors make it easy to follow best practices?

   a. Are instructions for use (IFU) for each piece of RME and the products HCW use to clean and disinfect RME easily accessible?
   b. Are cleaning and disinfecting wipes available at the point of use (i.e., on/near RME)?
   c. Is there a clear process for determining whether RME is clean or dirty (to ensure that only RME that has been cleaned and disinfected is used for resident care)?
   d. Store clean RME in a manner that prevents contamination prior to use on another resident.

4. Has a multidisciplinary team defined roles and responsibilities for all HCW involved in cleaning and disinfecting that addresses:

   a. RME and environmental surfaces that require cleaning and disinfection

   b. HCW role responsible for cleaning and disinfecting each item and surface

   c. When cleaning and disinfecting should occur

   d. Which cleaning and disinfection product should be used[16].

      i. "Equipment used in LTC facilities must be cleaned and disinfected according to the Spaulding Classification[17] system, which classifies medical devices as critical, semi-critical, or noncritical, based on the use of the device."[18]

Summarize

[16] APIC Forms and Checklists for Infection Prevention Volume 2 preview (accessed 7/26/21).
[17] CDC A Rational Approach to Disinfection and Sterilization. Guideline for Disinfection and Sterilization in Healthcare Facilities (2008)
[18] APIC Infection Prevention Guide to Long-Term Care 2nd Edition, p. 146

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric.

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff), brainstorm action steps that will help decrease the IPC risk and meet the goal – refer to evidence-based recommendations. Consider the following questions:

> What is one change in policy, protocol, operations, products, workflow, education, surveillance, strategy, etc. to propose to the QAPI committee?

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

Step 6: Decision

Determine whether the intervention should be adopted/adapted/abandoned in lieu of another strategy. Consider what you'll do if your process change works or doesn't work.

Utilizing the appropriate cleanser/disinfectant

Step 1: Environmental services leadership and QAPI committee, in collaboration with IP, select an improvement opportunity

Goal: Use the right cleaner/disinfectant at the right time (i.e., prior to use on another patient and when visibly soiled).

Step 2: Measure the current baseline

Identify the current state/baseline status for occupational health practices, i.e., evidence of the IPC risk. Determine if the facility has collected any audit data on the selected improvement opportunity.

Audit

Audit HCW adherence to recommended practices and facility expectations for three to six months to establish a baseline. Consider the following principles:

1. First clean (remove soiling), then disinfect, as "organic matter such as blood and body fluids will inactivate disinfectants"[19].
2. Determine whether disinfectant products contain a cleaning agent or if a separate cleaning product is needed prior to disinfecting surfaces. Are HCW using products correctly?
3. Ensure products are EPA-registered hospital-grade disinfectants.
4. Find the "EPA reg" number on the product label. Go to the Pesticide Product and Label System website and enter the number into the "EPA Regulation #" field. Click on the most updated report for product specifications.
5. Ensure HCW know how long a product needs to remain wet on the surface to be effective. Calculate the proportion of staff who can correctly identify contact times for each product they use.
    a. Number of staff who correctly identified correct contact times divided by number of staff who were asked to identify contact times. Multiply by 100 to get a percentage of staff aware of product contact times.

Review

Review audit data and look for trends. Identify root causes for the successes and gaps.

1. Do facility policies clearly communicate expectations?
2. Do HCW have the knowledge and competency to adhere to expectations? Recommended IPC competency for HCW: Describe how microorganisms are transmitted in healthcare settings; specifically:

    a. Describe the difference between a product that cleans and one that disinfects.

3. Do environmental factors make it easy to adhere to expectations?

[19] APIC Infection Prevention Guide to Long-Term Care 2nd Edition, p. 133

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric.

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff), brainstorm action steps that will help decrease the IPC risk and meet the goal – refer to evidence-based recommendations. Consider the following questions:

> What is one change in policy, protocol, operations, products, workflow, education, surveillance, strategy, etc. to propose to the QAPI committee?

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

Step 6: Decision

Determine whether the intervention should be adopted/adapted/abandoned in lieu of another strategy. Consider what you'll do if your process change works or doesn't work.

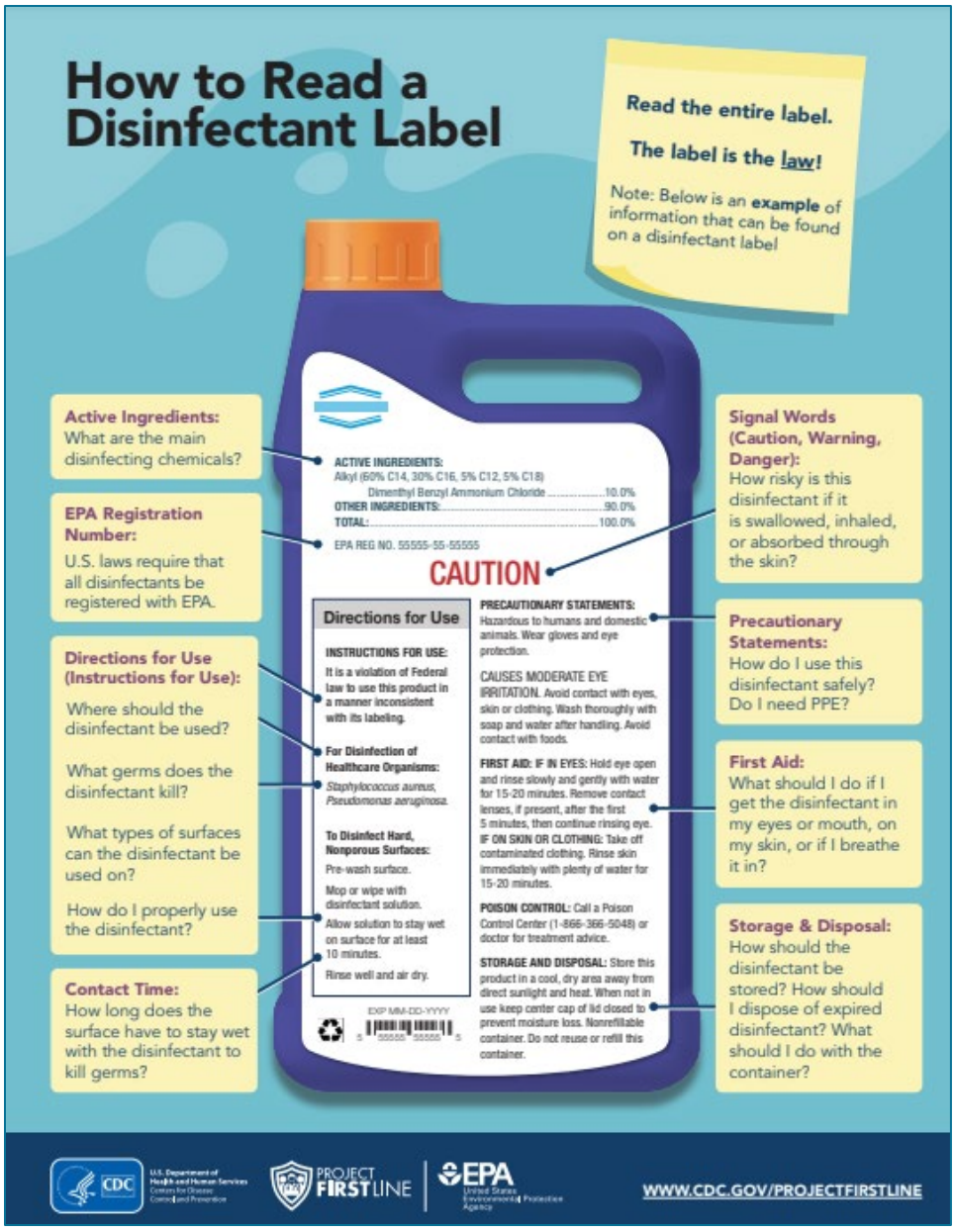


Figure 26. How to Read a Disinfectant Label

Preventing cross contamination

Step 1: Environmental services leadership and QAPI committee, in collaboration with IP, select an improvement opportunity

When terminally cleaning resident rooms:

"Unused items, such as toilet paper and towels, are considered contaminated and should be discarded if disposable, or cleaned if reusable… All linen in the resident's room, both used and unused is considered contaminated and must be sent to the laundry…"[20]

Goal: Separate clean supplies and equipment from dirty supplies and equipment to prevent cross-contamination.

Step 2: Measure the current baseline

Identify the current state/baseline status for occupational health practices, i.e., evidence of the IPC risk. Determine if the facility has collected any audit data on the selected improvement opportunity.

Audit

Audit HCW adherence to recommended practices and facility expectations for three to six months to establish a baseline. Ensure the following:

1. Cleaning and disinfecting procedures are thorough and frequent enough to minimize pathogen reservoirs (i.e., surfaces in the resident zone, high-touch surfaces and those likely to be contaminated by resident secretions/excretions).
2. Calculate compliance with completion of cleaning/disinfecting tasks.
    a. "Only clean and sterile equipment should be stored in a clean utility room, and the area should be designed to protect items from contamination and damage."[21]
    b. "…Remove the shipping container prior to placing the supplies in the clean storage room. The boxes or soft packaging of the products inside are considered clean; the outer shipping container is not."[22]
    c. Calculate HCW adherence to storing only clean items in the clean supply/utility room.
        i. Number of audits in which only clean items are found in clean supply/utility room divided by number of clean supply/utility room audits conducted. Multiply by 100 to get a compliance percentage.
3. ABHS dispenser is available in the clean utility room.
4. Products are stored on designated shelving, carts or cabinets.

[20] APIC Infection Prevention Guide to Long-Term Care 2nd Edition, p. 136
[21] APIC Infection Prevention Guide to Long-Term Care 2nd Edition, p. 149
[22] Ibid

a. "Supplies stored on the bottom of a wire, open-shelf cart need a physical barrier between the shelf and the floor for protection against cleaning chemicals."
b. "Equipment must not be stored on or around the sink due to the potential for water damage/ contamination from splashing."
c. "Clean and sterile items must not be stored under any sink due to potential plumbing leaks."

Review

Review audit data and look for trends. Identify root causes for the successes and gaps.

1. Do facility policies clearly communicate expectations?
2. Do HCW have the knowledge and skills to adhere to expectations?
3. Do environmental factors make it easy to adhere to expectations?

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric.

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff), brainstorm action steps that will help decrease the IPC risk and meet the goal – refer to evidence-based recommendations. Consider the following questions:

> What is one change in policy, protocol, operations, products, workflow, education, surveillance, strategy, etc. to propose to the QAPI committee?

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

Step 6: Decision

Determine whether the intervention should be adopted/adapted/abandoned in lieu of another strategy. Consider what you'll do if your process change works or doesn't work.

Linen management

Step 1: Environmental services leadership and QAPI committee, in collaboration with IP, select an improvement opportunity

Goal: Package, transport, and store clean textiles and fabrics by methods that will ensure their cleanliness and protect them from dust and soil during interfacility loading, transport, and unloading.

Step 2: Measure the current baseline

Identify the current state/baseline status for occupational health practices, i.e., evidence of the IPC risk. Determine if the facility has collected any audit data on the selected improvement opportunity.

Audit

Audit HCW adherence to recommended practices and facility expectations for three to six months to establish a baseline. Ensure the following:

1. HCW perform hand hygiene prior to handling clean linens.
2. Clean linen is stored separately from dirty linen and other items.
3. Linen storage racks are covered to prevent contamination.
4. HCW "Handle contaminated textiles and fabrics with minimum agitation to avoid contamination of air, surfaces and persons."[23]

Review

Review audit data and look for trends. Identify root causes for the successes and gaps.

1. Do facility policies clearly communicate expectations?
2. Do HCW have the knowledge and skills to adhere to expectations?
3. Do environmental factors make it easy to adhere to expectations?

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric.

Step 4: Brainstorm action steps

[23] Ibid

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff), brainstorm action steps that will help decrease the IPC risk and meet the goal – refer to evidence-based recommendations. Consider the following questions:

> What is one change in policy, protocol, operations, products, workflow, education, surveillance, strategy, etc. to propose to the QAPI committee?

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

Step 6: Decision

Determine whether the intervention should be adopted/adapted/abandoned in lieu of another strategy. Consider what you'll do if your process change works or doesn't work.

Water management

Step 1: Select an improvement opportunity

What chemical and physical control measures does the facility implement to limit waterborne pathogens' ability to form biofilms in the facility's water system – and subsequently infect residents?

Goal: Reduce opportunities for the growth and spread of waterborne pathogens, including *Legionella*.

Step 2: Measure the current baseline

Identify the current state/baseline status for occupational health practices, i.e., evidence of the IPC risk. Determine if the facility has collected any audit data on the selected improvement opportunity.

Audit

Audit HCW adherence to recommended practices and facility expectations for three to six months to establish a baseline.

1. Complete a CDC worksheet to determine your building's water management program needs.

Review

Review audit data and look for trends. Identify root causes for the successes and gaps.

1. Do facility policies clearly communicate expectations and include the following?
   a. Water Management Program team.
   b. Legionnaires disease prevention.
   c. Water intrusion. "Document policies to identify and respond to water damage. Such policies should result in either repair and drying of wet structural materials within 72 hours, or removal of the wet material if drying is unlikely within 72 hours."[24]
   d. Dialysis. "Perform assays at least once a month by using standard quantitative methods for endotoxin in water used to reprocess hemodialyzers, and for heterotrophic, mesophilic bacteria in water used to prepare dialysate and for hemodialyzer reprocessing."[25]
   e. Ice machines and ice.
   f. Hydrotherapy tanks and pools.
   g. Dental.
   h. Decorative fountains.
2. Do HCW have the knowledge and competency to implement a water management program?

[24] CDC Guidelines for Environmental Infection Control in Health-Care Facilities- Outcome Measures, p. 4
[25] Ibid

3. Do environmental factors make it easy to adhere to expectations?

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric.

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff), brainstorm action steps that will help decrease the IPC risk and meet the goal – refer to evidence-based recommendations. Consider the following questions:

> What is one change in policy, protocol, operations, products, workflow, education, surveillance, strategy, etc. to propose to the QAPI committee?

Step 5: Measurement strategies

Determine how you'll know whether your action step is getting you closer to achieving your goal.

Step 6: Decision

Determine whether the intervention should be adopted/adapted/abandoned in lieu of another strategy. Consider what you'll do if your process change works or doesn't work.


GERMS LIVE IN WATER AND ON WET SURFACES.
WHERE IS THE RISK?
Know where germs live to stop spread and protect patients
• Tap water is safe to drink, but it is not sterile. It always has some germs in it.
• Most of the time, the germs in tap water aren't a problem for healthy people, but they can cause illness in patients with very weak immune systems.
• Germs in water can spread to surfaces and people and cause harm.
• If medical instruments and equipment (e.g., devices and central lines) get wet, bacteria can grow. When those devices are used, that bacteria can then get into a patient's body or blood and cause infection.
Germs That Live in Water
• Acinetobacter
• Serratia
• Pseudomonas
• Legionella
Healthcare Tasks Involving Water
• Toileting
• Cleaning
• Handwashing
Infection Control Actions to Reduce Risk
• Cleaning and disinfection
• Device sterilization
• Hand hygiene
• Use of personal protective equipment (gloves, gowns, eye protection)
CDC
PROJECT FIRSTLINE
WWW.CDC.GOV/PROJECTFIRSTLINE

Construction and renovation

Step 1: Clinical leadership and QAPI committee, in collaboration with IP, select an improvement opportunity

In a process in place to ensure that an infection control risk assessment (ICRA) is performed prior to all construction/renovation activity?

Goal: Reduce infection opportunities due to exposure to fungal spores from dust generation and moisture intrusion during construction renovation.

Step 2: Measure the current baseline

Identify the current state/baseline status for occupational health practices, i.e., evidence of the IPC risk. Determine if the facility has collected any audit data on the selected improvement opportunity.

Infection Control Risk Assessment 2.0
Matrix of Precautions for Construction, Renovation and Operations

Patient Risk Group	Construction Project Type: TYPE A	TYPE B	TYPE C	TYPE D
LOW Risk Group	I	II	II	III*
MEDIUM Risk Group	I	II	III*	IV
HIGH Risk Group	I	III	IV	V
HIGHEST Risk Group	III	IV	V	V

Figure 27. American Society for Health Care Engineering (ASHE) Infection Control Risk Assessment (ICRA) template available

Audit

Audit HCW adherence to recommended practices and facility expectations for three to six months to establish a baseline.

1. A process is in place to ensure an ICRA is conducted prior to all construction or renovation projects. Consider using the ICRA template developed by ASHE to guide IPC recommendations (see above).
    a. "Document whether infection-control personnel are actively involved in all phases of a healthcare facility's demolition, construction, and renovation. Activities should include performing a risk assessment of the necessary types of construction barriers, and daily monitoring and documenting of the presence of negative airflow within the construction zone or renovation area."[26]

[26] CDC Guidelines for Environmental Infection Control in Health-Care Facilities- Outcome Measures, p. 4

   b. Issues frequently addressed during the design phase include budget, space constraints including storage and equipment cleaning areas, air-handling units, handwashing facilities, appropriate finishes, specific products with infectious implications, and applicable regulations.[27]

2. Adherence to IPC measures and compliance with recommended corrective actions are monitored and documented throughout construction/renovation project.

Review

1. Review audit data and look for trends. Identify root causes for the successes and gaps.
2. Do facility policies clearly communicate expectations? "Form a multidisciplinary, collaborative team to identify and proactively mitigate the effects of demolition, construction, and renovation activities on air quality, water, and HVAC systems, environmental cleanliness, and traffic flow."[28]
3. Complete a construction- and renovation-focused infection control risk assessment (ICRA) "before initiating repairs, demolition, construction, or renovation activities [that] can identify potential exposures of susceptible patients to dust and moisture and determine the need for dust and moisture containment measures."[29]
4. Do HCW have the knowledge and competency to implement policies?
   a. Provide education about IPC recommendations to HCW and construction workers.
   b. Review CDC Guidelines for Environmental Infection Control in Health-Care Facilities Recommendations on Air and Construction, Renovation, Remediation, Repair and Demolition
   c. North Central States Regional Council of Carpenters Infection Control Risk Assessment (ICRA) Training
   d. ASHE e-Learning courses ICRA 2.0: Improving Patient Protections | ASHE

4. Do environmental factors make it easy to adhere to expectations?

Summarize

Summarize findings for QAPI committee and unit/department staff, highlighting interpretations for the successes and gaps.

Step 3: Future goal development

Develop a specific, measurable, achievable, relevant, time-bound (SMART) goal that describes how you want to improve the metric.

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[27] Bartley, JM, 1997, 1998, 1999 APIC Guidelines Committees. APIC State-of-the-Art Report: The role of infection control during construction in health care facilities. *Am J Infect Control* 2000;28:156-69. (pp. 158-159)
[28] The APIC/JCR Infection Prevention and Control Workbook, 4th Edition (2021), p. 179. Edited by Grota, P.G. and Rupp, A.H. Published by Joint Commission Resources Oak Brook, Illinois 60523 USA https://www.jcrinc.com
[29] CDC Guidelines for Environmental Infection Control in Health-Care Facilities (2003), p. 40

Step 4: Brainstorm action steps

In collaboration with the people who will be involved in the improvement activities (e.g., unit leaders and staff), brainstorm action steps that will help decrease the IPC risk and meet the goal – refer to evidence-based recommendations. Consider the following questions:

> What is one change in policy, protocol, operations, products, workflow, education, surveillance, strategy, etc. to propose to the QAPI committee?

Step 5: Measurement strategies

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Step 6: Decision

Determine whether the intervention should be adopted/adapted/abandoned in lieu of another strategy. Consider what you'll do if your process change works or doesn't work.

Environment of Care: Resources

Guidelines and recommendations

1. CDC Guidelines for Environmental Infection Control in Health-Care Facilities.
2. CDC Healthcare Environmental Infection Prevention – Reduce Risk from Surfaces
3. Minnesota Hospital Association Environmental Services Cleaning Guidebook
4. CDC Recommendations for Disinfection and Sterilization in Healthcare Facilities
5. CDC Healthcare Environmental Infection Prevention – Reduce Risk from Surfaces
6. CDC Core Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings
7. CDC Properties of an ideal disinfectant
8. CDC Guidelines for Environmental Infection Control in Health-Care Facilities: G. Recommendations-Laundry and Bedding

Education

1. CDC EVS and the Battle Against Infection Online Interactive Training
2. CDC/STRIVE Environmental Cleaning modules
3. CDC Infection Control Basics
4. APIC Environmental Services Education and Training Resources for Healthcare Professionals
5. CDC Project Firstline: Group Five Environmental Cleaning and Disinfection Basics (Web on Demand)
6. CDC Nursing Home IP Training courses Module 11A: Reprocessing Reusable Resident Care Equipment and Module 11B: Environmental Cleaning and Disinfection
7. CDC Tune in to Safe Healthcare: A CDC Webinar Series
8. CDC Nursing Home IP Training Course – Module 11D: Linen Management

Tools

1. CDC Options for Evaluating Environmental Cleaning
2. C. difficile Cleaning Audit Tool for IPC
3. CDC/STRIVE Competency-Based Training, Audits and Feedback modules
4. CDC Environmental Checklist for Monitoring Terminal Cleaning

Supporting articles

1. APIC Issue Brief: Strategies to Mitigate Cross Contamination of Non-critical Medical Devices
2. Carrico RM, Rebmann T, English JF, Mackey J, Cronin SN. Infection prevention and control competencies for hospital-based health care personnel. Am J Infect Control. 2008 Dec;36(10):691-701.
3. Carrico RM, Rebmann T, English JF, Mackey J, Cronin SN. Infection prevention and control competencies for hospital-based health care personnel. Am J Infect Control. 2008 Dec;36(10):691-701.

Water management

1. CDC Worksheet to Identify Buildings at Increased Risk for *Legionella* Growth and Spread
2. CDC Guidelines for Environmental Infection Control in Health-Care Facilities – Water Recommendations
3. CDC Developing a Legionella Water Management Program – Establish a Water Management Program Team, p. 7
4. CDC Legionella (Legionnaires' Disease and Pontiac Fever) – For Clinicians

5. CDC Preventing Legionnaires' Disease: A Training on Legionella Water Management Programs (Prevent LD Training)
6. CDC Nursing Home IP Training Course – Module 11C: Water Management Program

Construction and renovation

1. Facility Guidelines Institute Guidelines for Design and Construction of Residential Health, Care, and Support Facilities (requires purchase)
2. Bartley, JM, 1997, 1998, 1999 APIC Guidelines Committees. APIC State-of-the-Art Report: The role of infection control during construction in health care facilities. Am J Infect Control 2000;28:156-69.
3. APIC Epi® Education Series: Basics of Construction and Renovation
4. APIC Infection Prevention Manual for Construction and Renovation (requires purchase)
5. CDC Guidelines for Environmental Infection Control in Health-Care Facilities Recommendations on Air and Construction, Renovation, Remediation, Repair and Demolition
6. North Central States Regional Council of Carpenters Infection Control Risk Assessment (ICRA)Training
7. ASHE e-Learning courses ICRA 2.0: Improving Patient Protections | ASHE

Continuous improvement resources

Glossary

ABHS	Alcohol-Based Hand Sanitizer
AHA	American Hospital Association
AHE	Association for the Health Care Environment
AHRQ	Agency for Healthcare Research and Quality
APIC	Association for Professionals in Infection Control and Epidemiology
BBP	Bloodborne pathogens
CAUTI	Catheter-Associated Urinary Tract Infection
CDC	Centers for Disease Control and Prevention
CDI	*Clostridioides difficle* Infection (formerly *Clostridium difficile* Infection)
CLABSI	Central Line Associated Bloodstream Infection
CMS	Centers for Medicare and Medicaid
CRE	Carbapenem-Resistant Enterobacteriaceae
DHHS	Department of Health & Human Services
EM	Emergency Management
EP	Emergency Preparedness
EPA	Environmental Protection Agency
EVS	Environmental Services
FEMA	Federal Emergency Management Agency
FTE	Full-Time Equivalent
HAI	Healthcare-Associated Infection
HCPH	Hennepin County Public Health
HCW	Healthcare worker
HICPAC	Healthcare Infection Control Practices Advisory Committee
ICAR	Infection Control Assessment and Response
ICS	Incident Command System
IDSA	Infectious Diseases Society of America

Glossary

IFU	Instructions for Use
IHI	Institute for Healthcare Improvement
IP	Infection Preventionist
IPC	Infection Prevention and Control
LTC	Long-Term Care
LTCF	Long-Term Care Facility/Facilities
MDH	Minnesota Department of Health
MDRO	Multidrug-Resistant Organism
MN	Minnesota
MRSA	Methicillin-Resistant *Staphylococcus aureus*
NACCHO	National Association of County and Health Officials
NHSN	National Healthcare Safety Network
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
QAPI	Quality Assurance and Performance Improvement
RME	Reusable Medical Equipment
SHEA	Society for Healthcare Epidemiology of America
SNF	Skilled Nursing Facility
SPICE	Statewide Program for Infection Control and Epidemiology
STRIVE	States Targeting Reduction in Infections via Engagement
TB	Tuberculosis
TBP	Transmission-Based Precautions
UNC	University of North Carolina