Infection Control Assessment & Response (ICAR)

Training Steps for New Reviewer

1. Representative at Public Health Seattle & King County (PHSKC) will review these slides with the new reviewer to provide an overview of the ICAR process and procedure:

   COVID-19 ICAR Procedure Presentation.pptx

2. New reviewer will go through these slides to learn the background infection prevention and control knowledge for questions in the ICAR tool. The slides walks you through the different domains for the gap assessment. (Be sure to read the notes below the slides.)

   ICAR Background IPC Knowledge.pptx

3. Reviewer will review this slide presentation on performing the “observations round” for an ICAR in a Nursing Home. (Be sure to read the notes below the slides.)

   Infection Control Assessment in a Nursing Home.pptx

4. Reviewer will watch this sample video of environmental rounds developed by North Carolina Spice Statewide Program for Infection Control and Epidemiology:

   https://vimeo.com/336719335

5. Reviewer is ready to start the shadowing program. The reviewer will shadow an experienced reviewer while she/he performs an ICAR assessment. Please see the information on the shadowing program. (We could add the Shadowing Program document that I did that included the competency check off here.)
COVID-19 INFECTION PREVENTION AND CONTROL ASSESSMENT AND RESPONSE (ICAR)

Communicable Disease Epidemiology and Immunization Section

Healthcare-Associated Infections
What is an ICAR?

- Infection Control Assessment and Response (ICAR) tools are used to:
  - systematically assess a healthcare facility’s infection prevention and control (IPC) practices and to
  - guide quality improvement activities by (e.g., addressing identified gaps)
Should I conduct an assessment in-person or remotely via a TeleICAR?

- **In-person ICARs**
  - are preferred when possible, especially for facilities experiencing an outbreak
  - eliminate technical difficulties (e.g., video function failure)
  - Allow the facilitator to visualize the facilities IPC practices and layout of the facility

- **Remote TeleICARs**
  - allow for a larger number of facilities to be reached in a shorter amount of time
  - allow for social distancing
  - eliminates the use of PPE supplies
  - usually will not identify as many gaps in practices as in-person visits
Other Factors in Decisions for In-person versus TeleICAR

- Public health resources
- Location and remoteness of the facility
- Presence of an active outbreak
- Timeliness in need to provide assistance
Scheduling an ICAR

The ICAR Scheduler will reach out to the facility “using a script” to:

- describe the process and expectations to help ensure a standardized process
- inform facility that visit is for support and is non-regulatory
- inform facility that a tour will be conducted if an on-site visit and if time permits, during a TeleICAR
- collect demographic information on the facility
- confirm date, time, facility contact and send email invite to:
  - Facility contact(s)
  - Facilitator assigned to do ICAR
  - LHJ contact(s)
  - Need group email here if you want copied on the invite too
  - In email invite subject: Infection Control Support Visit: Name of Facility
- Able to accommodate tele-visits via Zoom/Microsoft Teams/Skype
- Scheduler sends the correct ICAR tool and demographics collected in the email invite for their review and completion of ICAR if time permits.
Who should be present during the ICAR?

- Encouraged to attend the entire assessment:
  - Facility administrator
  - Infection Preventionist
- Others who may attend:
  - Director of Nursing
  - Assistant Director of Nursing
  - Clinical Leads
- During Environmental Services Review:
  - Housekeeping supervisor
- During visual rounds:
  - Talk to front-line staff (to assess IPC practices/knowledge)
Preparing for an ICAR

- The Facilitator should perform the following prior to the ICAR
  - Review updates in relevant and current COVID-19 state and federal prevention guidance
  - Fill in the ICAR tool with the demographic information of the facility
  - Check the PHSKC Internal LTC dashboard for information on cases and supply shortage
    - [Link here](https://fortress.wa.gov/dshs/adssaapps/lookup/NHPubLookup.aspx)
  - Review Washington State Department of Health and Social Services for reports on inspections and investigations of the facility
  - Review Medicare Nursing Home Compare website for stats on the facility
    - [https://www.medicare.gov/care-compare/](https://www.medicare.gov/care-compare/)
  - Review the facility’s website for information posted regarding IPC guidelines and outbreaks, etc.
First Steps in Conducting the TeleICAR

- **The Scheduler, if applicable, will do the following:**
  - contact the facility with a reminder of the upcoming ICAR
  - Troubleshoot connection issues by the facility or facilitator

- **The facilitator will do the following:**
  - Launch the Microsoft Teams (or other platform) visit to initiate the meeting
  - Introduce themselves and others on the call to the facility contact(s)
  - Ask the facility contact(s) to introduce themselves and discuss their role and experience
  - Reiterate that the ICAR is non-regulatory and facilities are not cited or fined for deficiencies or gaps in practice
  - Note the goals of the tele-visit
  - Tell the facility what to expect during the ICAR, including time commitment
Conducting the TeleICAR

- The Facilitator will:
  - Pull up the ICAR tool and share their screen
  - Validate that the prefilled demographics are correct
  - Go through each section of the tool and document information collected
  - Foster discussions of the facility’s infection prevention and control practices instead of just yes/no answers
  - Use a professional, respectful and supportive tone
  - Ask open-ended questions which prompts for more descriptive responses
  - Provide immediate verbal feedback during the assessments to
    - validate recommended practices and
    - provide suggestions for improvements for identified IPC gaps
Conducting the TeleICAR

- The Facilitator will:
  - Use the ICAR as a guide for the conversation and education of infection prevention and control
  - Based on the needs of the facility, the conversation may focus on IPC identified priorities, instead of all the topics described in the ICAR
  - Provide rationale behind the questions to foster understanding and compliance
  - As gaps are identified, make a list resources to provide to the facility
  - Avoid interruptions and implement active listening skills
  - Reflect back and summarize recommendations provided
Upon completion of the TeleICAR

The facilitator will do the following:

- Ask the facility contact if they have any other questions or concerns
- Ask other LHJ person(s) and other Infection Preventionist(s) on the call, if applicable, if they have any additional questions or recommendation for the facility
- Thank the facility for their participation
- Thank the LHJ and other Infection Preventionist for their participation, if applicable
- Let the facility know what to expect after the ICAR:
  - A follow-up email within 2-5 business days with the following attachments:
    - the assessment, a letter summarizing the recommendations and resources
- Provide the facilitator’s contact information in case the facility has further questions.
Preparing the ICAR report

The facilitator will do the following:

- Review the completed ICAR tool and notes to formulate the final reports:
  - Completed ICAR Tool
  - Cover letter on PHSKC letter head
    - Include goal of the ICAR
    - Summary and highlights of the assessment
    - List prioritized infection prevention and control recommendations for the facility to implement
    - Cover letter should be no more than 2-5 pages.
    - Include additional information in a separate addendum, if needed
- Research and locate resources needed, for example, Aerosol Precautions sign, Quarantine Sign, Cough Etiquette, PPE Competency Checklist, etc.
- Check spelling and grammar.
Format to save the ICAR reports

The facilitator will do the following:

- In the “_______________” Folder, in the correct facility type folder, create folder labeled in the following format: Facility Name_Type Facility_Date of Assessment. For example, Avamere_SNF_03.07.21 and in that folder, save:
  - Assessment labeled in format: Facility Name_Type of Facility_Assessment_Date of Assessment. For example, Avamere_SNF_Assessment_03.07.21.
  - Cover Letter labeled in format: Facility Name_Type of Facility_Letter_Date of Letter. For example, Avamere_SNF_Letter_03.09.21
    - Convert Cover Letter to PDF document and save in this folder also.
Email the ICAR reports

The facilitator will do the following:

- Email the final report/documents to the main facility contact and attach the following:
  - Cover Letter in PDF format
  - Completed ICAR
  - Resources
- Be sure to cc the following on the email:
  - Other PHSKC participants on the ICAR
  - HAI or COVID team manager
Follow-up after the TeleICAR

- The facilitator should consider follow-up with the facility if many gaps were identified that may require additional follow-up support
  - Provide follow-up support phone calls (touch-base)
    - Send in letter findings & follow-up provided and save in the facility folder
  - Offer remote trainings as needed
  - Repeat assessment with an in-person visit if indicated
Bibliography

Infection Prevention and Control Assessment & Response (ICAR)

Background Knowledge
What is an ICAR?

- The infection control assessment tools were developed by CDC to assist health departments in assessing infection prevention practices and guide quality improvement activities.
- These tools may also be used by healthcare facilities to conduct internal quality improvement audits.

Types of ICAR Tools

- Acute Facilities
- Outpatient Settings
- Hemodialysis
- Long-term Care
Outline

- Infection Prevention & Control Infrastructure
- Healthcare Personnel and Patient Safety
- Surveillance & Disease Reporting
- Standard Precautions
  - Hand Hygiene
    - Competency-based training
    - Audit & Feedback
- Transmission-based Precautions
  - Personal Protective Equipment
- Respiratory Hygiene/Cough Etiquette
- Injection Safety & Point of Care Testing
- Cleaning, Disinfection & Sterilization
- Antibiotic Stewardship
Infection Prevention & Control Program Infrastructure
Outline

- Designated Person for IPC
- Education & Training of the IP
- Development of Policies & Procedures
- Emergency Preparedness Plan
- Process for Reviewing Surveillance Data
Objectives

➢ Understand the education and training requirements of the IP
➢ List the core competencies of the Infection Preventionist (IP)
➢ Know where to find resources for education & training for the IP role
➢ Explain the process for reviewing surveillance data
➢ Understand the requirements for infection prevention and control policies and staff education
Infection preventionist (IP) are subject matter experts on the prevention of healthcare-associated infections (HAIs).

IPs review and monitor the scientific literature related to HAI prevention and apply the evidence-based recommendations by CDCs Healthcare Infection Control Practices Advisory Committee.
### Requirement of an Infection Preventionist

- Excerpt from CMS infection Control Worksheet for Nursing Homes

<table>
<thead>
<tr>
<th>Section B</th>
<th>Infection Preventionist</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.1.</td>
<td>The facility has designated one or more individuals with initial and maintain ongoing specialized training in infection prevention and control as the Infection Preventionist (IP). This individual works at least part-time in the facility.</td>
</tr>
</tbody>
</table>

*Examples of specialized training may include: Participation in infection control courses organized by the state or recognized professional societies (e.g., APIC, SHEA, state/local health department, CDC). A free online and on-demand infection prevention and control training titled "Nursing Home Infection Preventionist Training Course" is available on CDC's TRAIN website ([https://www.train.org/cdctrain/training_plan/3814](https://www.train.org/cdctrain/training_plan/3814)).*
Infection Preventionist Core Competencies

I. Identification of infectious disease processes
II. Surveillance and epidemiologic investigations
III. Preventing/controlling the transmission of infectious agents
IV. Employee/occupational health
V. Management and communication
VI. Education and Research
VII. Environment of Care
VIII. Cleaning, Sterilization, Disinfection, Asepsis

The IP is a preventer of healthcare-associated infection (HAI)
Association for Professionals in Infection Control and Epidemiology (APIC)

Education & Certification
- Annual Conference
- Infection Prevention Academy
- EPI Intensive
- EPI 101 & 102 for LTC
- ASC Intensive
- On-line Learning
- Certification in IPC
- Developmental Path for the IP

Website: [http://www.apic.org/](http://www.apic.org/)
Roadmap for the Novice Infection Preventionist

Tasks, knowledge, skills, abilities, and resources to take an infection preventionist from day 1 on the job through passing the Certification in Infection Prevention and Control (CIC) exam.

Stage 1
- Days 1–60

Stage 2
- Days 61–120

Stage 3
- Days 121–end of year 1

Stage 4
- Beginning of year 2 – passing the CIC exam
Training for the IP Role in Long-Term Care

CDC Training Modules (Free):
https://www.train.org/cdctrain/training_plan/3814

APIC Training:
https://apic.org/education-and-events/ltc-certificate/
CIC: Certification in Infection Prevention & Control
https://www.cbic.org/CBIC/CIC-Certification/About-the-Examination.htm

Recertification by:
- Examination (SARE)
  OR
- Continuing Education
  • IPUs

A-IPC: Associate Infection Prevention and Control
an entry level exam for new IP just starting out:
https://www.cbic.org/CBIC/Get-Certified/Get-Started/a-IPC.htm

https://www.cbic.org
Primary References


Secondary References

- Current Recommendations of the Advisory Committee on Immunization Practices (ACIP).
- Current guidelines, standards, and recommendations from CDC, APIC, SHEA, and Public Health Agency of Canada.
Infection Prevention & Control Policies

- Excerpt from CMS infection Control Worksheet for Nursing Homes

<table>
<thead>
<tr>
<th>Section</th>
<th>Infection Prevention and Control Program (IPCP) Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.1.</td>
<td>The facility has written infection prevention and control policies and procedures which are based on current nationally recognized evidence-based guidelines (e.g., CDC/HICPAC), regulations or standards for its Infection Prevention and Control Program (IPCP).</td>
</tr>
<tr>
<td>A.2.</td>
<td>The facility has evidence of mandatory personnel infection prevention and control training which includes the IPCP written standards, policies, and procedures.</td>
</tr>
</tbody>
</table>
Infection Prevention & Control Policies

- Review/Revise Annually
- Routinely monitor/evaluate
- Practice = Policy
Emergency Preparedness Plan

- Ebola virus
- Nuclear explosion
- Train derailment
- Volcano eruption
Process for Reviewing Surveillance Data

- The facility should have a process in place for reviewing surveillance data (incidents of communicable diseases and infections) on a regularly basis, for example, via:
  - Infection Prevention and Control Committee
  - OR
  - Quality Assurance Committee.

- Action should be taken when needed and documented in the committee minutes.
Summary

- The IP performs many roles within the healthcare facility and must have evidence of competence.
  - Education and training resources for the IP role can be found via several organizations.
  - The facility must have a process in place to review communicable disease/infections data.
  - The facility is required to have updated infection prevention and control policies and provide staff education on the policies and procedures.
Bibliography

- [www.apic.org](http://www.apic.org)
- [APIC Text. Chapter 1 & 2](http://www.cbic.org)
- [http://www.cbic.org](http://www.cbic.org)
- [https://www.cdc.gov/longtermcare/training.html](https://www.cdc.gov/longtermcare/training.html)
Healthcare Personnel and Resident/Patient Safety
Outline

- Employee health policy
- Tuberculosis & screening
- Hepatitis B vaccination
- OSHA requirement—exposure control plan
- Influenza vaccination
- Resident safety
Objectives

➢ Know the screening and vaccination requirements of the facility to keep their employees and residents safe.
➢ Understand the requirements related to OSHA’s bloodborne pathogen standard and TB Control
### Table 3. Summary of suggested work restrictions for health care personnel exposed to or infected with infectious diseases of importance in health care settings, in the absence of state and local regulations (modified from ACIP recommendations⁹)

<table>
<thead>
<tr>
<th>Disease/problem</th>
<th>Work restriction</th>
<th>Duration</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conjunctivitis</td>
<td>Restrict from patient contact and contact with the patient’s environment</td>
<td>Until discharge ceases</td>
<td>II</td>
</tr>
<tr>
<td>Cytomegalovirus infections</td>
<td>No restriction</td>
<td></td>
<td>II</td>
</tr>
<tr>
<td>Diarrheal diseases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute stage (diarrhea with other symptoms)</td>
<td>Restrict from patient contact, contact with the patient’s environment, or food handling</td>
<td>Until symptoms resolve</td>
<td>IB</td>
</tr>
<tr>
<td>Convalescent stage, <em>Salmonella</em> spp.</td>
<td>Restrict from care of high-risk patients</td>
<td>Until symptoms resolve; consult with local and state health authorities regarding need for negative stool cultures</td>
<td>IB</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>Exclude from duty</td>
<td>Until antimicrobial therapy completed and 2 cultures obtained ≥24 hours apart are negative</td>
<td>IB</td>
</tr>
<tr>
<td>Enteroviral infections</td>
<td>Restrict from care of infants, neonates, and immunocompromised patients and their environments</td>
<td>Until symptoms resolve</td>
<td>II</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>Restrict from patient contact, contact with patient’s environment, and food handling</td>
<td>Until 7 days after onset of jaundice</td>
<td>IB</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Tuberculosis

- Infectious agent: *Mycobacterium tuberculosis complex*
  - Acid–fast bacilli; slow growing bacteria
- Mode of transmission: droplet nuclei
  - Isolation precautions: Airborne
- Occurrence: worldwide
- 9,025 new TB cases reported in US in 2018
- US case rate is 2.8 per 100,000 persons in 2018

Incubation period: 2 – 10 weeks

Latent TB (TB Infection)
- No symptoms and can’t spread to others
- Positive TST or positive IGRA blood test
- May develop disease if no treatment

TB Disease
- Develops with weakened immune system
- TB germs actively multiplying in your body
- Usually symptomatic: cough lasting >3 weeks, hemoptysis, fatigue, chills, fever, chest pain, weight loss, no appetite, or night sweats
- Can spread TB bacteria to others

https://www.cdc.gov/tb/topic/basics/tbinfectiondisease.htm
Symptoms of Tuberculosis

Symptoms of
Tuberculosis

(Established) pulmonary tuberculosis
Productive cough

Night sweats

Fever

Dry cough

Weight loss

Weakness

Gastrointestinal symptoms

Return of dormant tuberculosis
- Cough with increasing mucus
- Coughing up blood

Extrapulmonary tuberculosis
- Common sites:
  - Meninges
  - Lymph nodes
  - Bone and joint sites
  - Genitourinary tract

Miliary tuberculosis

Tuberculous pleuritis
- Chest pain

Grey lines = Specific
Colored lines = Overlapping

Poor appetite
**TB Risk Factors**

Latent TB
- Close contacts of person with infectious TB disease
- Person who migrated from areas with high rates of TB
- Homeless and persons in correctional facilities, nursing homes

TB Disease—High Risk for developing
- Persons infected with TB bacteria within last 2 years
- Weakened Immune Systems, e.g., HIV
- Babies and young children
- Elderly people
- IV drug abusers
Clinical Symptoms for TB
- Mantoux skin tests (TST) requires initial test, read in 48–72 hours
  - Or Interferon Gamma Release Assay (IGRA)
  - BCG–Vaccinated Persons may receive TST
- If positive TB test:
  - CXR
  - Sputum for AFB and culture
Highly suspicious for TB if:
- Symptoms of TB
- Positive TST
- CXR suggestive of TB
- +AFBs in sputum on smear
- If TB test results positive, notify HD (Class 1A reportable)
- Treatment: e.g., Isoniazid (INH), Rifapentine (RPT), Rifampin (RIF)
Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, 2005
### TABLE. Comparison of 2005* and 2019† recommendations for tuberculosis (TB) screening and testing of U.S. health care personnel (HCP)

<table>
<thead>
<tr>
<th>Category</th>
<th>2005 Recommendation</th>
<th>2019 Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline (preplacement) screening and testing</td>
<td>TB screening of all HCP, including a symptom evaluation and test (IGRA or TST) for those without documented prior TB disease or LTBI.</td>
<td>TB screening of all HCP, including a symptom evaluation and test (IGRA or TST) for those without documented prior TB disease or LTBI (unchanged); individual TB risk assessment (new).</td>
</tr>
<tr>
<td>Postexposure screening and testing</td>
<td>Symptom evaluation for all HCP when an exposure is recognized. For HCP with a baseline negative TB test and no prior TB disease or LTBI, perform a test (IGRA or TST) when the exposure is identified. If that test is negative, do another test 8–10 weeks after the last exposure.</td>
<td>Symptom evaluation for all HCP when an exposure is recognized. For HCP with a baseline negative TB test and no prior TB disease or LTBI, perform a test (IGRA or TST) when the exposure is identified. If that test is negative, do another test 8–10 weeks after the last exposure (unchanged).</td>
</tr>
<tr>
<td>Serial screening and testing for HCP without LTBI</td>
<td>According to health care facility and setting risk assessment. Not recommended for HCP working in low-risk health care settings. Recommended for HCP working in medium-risk health care settings and settings with potential ongoing transmission.</td>
<td>Not routinely recommended (new); can consider for selected HCP groups (unchanged); recommend annual TB education for all HCP (unchanged), including information about TB exposure risks for all HCP (new emphasis).</td>
</tr>
<tr>
<td>Evaluation and treatment of positive test results</td>
<td>Referral to determine whether LTBI treatment is indicated.</td>
<td>Treatment is encouraged for all HCP with untreated LTBI, unless medically contraindicated (new).</td>
</tr>
</tbody>
</table>

**Abbreviations:** IGRA = interferon-gamma release assay; LTBI = latent tuberculosis infection; TST = tuberculin skin test.


† All other aspects of the Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, 2005 remain in effect, including facility risk assessments to help guide infection control policies and procedures.
OSHA requires TB & Respiratory Protection Plan

- TB screening should be done on hire
- Facility should complete a TB Risk Assessment annually, based on regional & community data.
- Annual TB screening based on facility risk assessment and state law, as applicable
- TB Education – orientation & annual review
- Place suspected/active TB cases in Airborne Precautions
  - N95 respirator worn by HCW
  - Negative pressure isolation room or All Room
  - Air changes (>6 ACH existing rm, >12 ACH for new rm)
  - Place surgical mask on patient if transport necessary
  - Keep door closed

- Cough-inducing procedures in negative pressure room, N95 mask

- N95 Fit-testing on hire and annually or PAPR if unable to fit (includes seal test training)

https://www.osha.gov/tuberculosis/standards
Administer TST on new employees on hire, read in 48–72 hours, and if no TST in last 12 months, repeat in 7 days (2-step).

Administer TST annually to HCWs or as indicated by facility risk assessment and state law.

If HCW exposure to TB occurs:
- Obtain list of exposed HCWs
- Notify Employee Health
- TST baseline and repeat in 8–10 wks
- If +TST, obtain CXR and send HCW to HD for possible TB prophylaxis and monitoring
Transmission of *Hepatitis B & C*

- Sex with an infected partner
- Injection drug use that involves sharing needles, syringes, or drug-preparation equipment
- Birth to an infected mother
- Contact with blood or open sores of an infected person
- Needle sticks or sharp instrument exposures
- Sharing items such as razors or toothbrushes with an infected person
- Receipt of infected blood, blood products or organs.

http://www.cdc.gov/hepatitis/HBV/HBVfaq.htm#overview
65 viral hepatitis outbreaks in nonhospital setting

- Hepatitis B
  - 19 long term care facility (79% due to BG monitor)
    - 133 outbreak-associated cases of HBV
  - 6 in other settings (dental clinic, pain clinic, etc.)
    - 50 outbreak-associated cases of HBV
- Hepatitis C
  - 15 outpatient setting
    - 80 outbreak-associated cases of HCV
  - 22 hemodialysis centers
    - 104 outbreak-associated cases of HCV
  - 4 drug diversion by HCV-infected HCWs
    - 90 outbreak-associated cases of HCV

www.cdc.gov/hepatitis/outbreaks/healthcarehepoutbreaktable.htm
Patient to patient transmission occurred from:
- Unsafe practice related to BG monitoring
- Improper sterilization of podiatry instrument
- Preparation of meds in same area where blood specimens were processed
- Use of single-dose vials for >1 patient
- Primarily syringe reuse with contaminated MDV >1 patient
- Contamination of injectable medicines or flush solutions
- Using bags of saline solution on multiple patients
- Poor hand hygiene and glove use

https://www.cdc.gov/hepatitis/outbreaks/healthcarehepoutbreaktable.htm
### Interpretation of HBV serologic results

<table>
<thead>
<tr>
<th>HBsAg</th>
<th>anti-HBc</th>
<th>anti-HBs</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>negative</td>
<td>negative</td>
<td>negative</td>
<td>Susceptible</td>
</tr>
<tr>
<td>negative</td>
<td>positive</td>
<td>positive</td>
<td>Immune due to natural infection</td>
</tr>
<tr>
<td>negative</td>
<td>negative</td>
<td>positive</td>
<td>Immune due to hepatitis B vaccination</td>
</tr>
<tr>
<td>positive</td>
<td>positive</td>
<td>positive</td>
<td>Acutely infected</td>
</tr>
<tr>
<td>positive</td>
<td>positive</td>
<td>negative</td>
<td>Chronically infected</td>
</tr>
<tr>
<td>negative</td>
<td>positive</td>
<td>negative</td>
<td>Interpretation unclear; four possibilities:</td>
</tr>
<tr>
<td>positive</td>
<td>positive</td>
<td>negative</td>
<td>1. Resolved infection (most common)</td>
</tr>
<tr>
<td>positive</td>
<td>positive</td>
<td>negative</td>
<td>2. False-positive anti-HBc, thus susceptible</td>
</tr>
<tr>
<td>negative</td>
<td>positive</td>
<td>negative</td>
<td>3. &quot;Low level&quot; chronic infection</td>
</tr>
<tr>
<td>negative</td>
<td>positive</td>
<td>negative</td>
<td>4. Resolving acute infection</td>
</tr>
</tbody>
</table>

Prevention & Control of HBV & HCV

- Standard precautions
- Screening of blood donors
- Hepatitis B vaccination
  - Offer to HCW at risk of exposure to BBF on hire; if refuses, HCW must sign declination statement. (OSHA Requirement)
- Post-exposure prophylaxis for HBV (none available for HCV)
- Safe sexual practices
- Do not share razors or toothbrushes with infected persons
- Safe injection practices including safe medical devices
- Report to public health department
- Track HBV & HCV status of dialysis patients
## Post-exposure Prophylaxis HBV

<table>
<thead>
<tr>
<th>Health-care personnel status</th>
<th>Postexposure testing</th>
<th>Postexposure prophylaxis</th>
<th>Postvaccination serologic testing*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source patient (HBSAg)</td>
<td>HCP testing (anti-HBs)</td>
<td>HBIG*</td>
<td>Vaccination</td>
</tr>
<tr>
<td>Documented responder§ after complete series (≥3 doses)</td>
<td>No action needed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documented nonresponder¶ after 6 doses</td>
<td>Positive/unknown —**</td>
<td>HBIG x2 separated by 1 month</td>
<td>No</td>
</tr>
<tr>
<td>Negative</td>
<td>No action needed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response unknown after 3 doses</td>
<td>Positive/unknown &lt;10mIU/mL**</td>
<td>HBIG x1</td>
<td>Initiate revaccination</td>
</tr>
<tr>
<td>Negative</td>
<td>&lt;10mIU/mL</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Any result</td>
<td>≥10mIU/mL</td>
<td>No action needed</td>
<td></td>
</tr>
<tr>
<td>Unvaccinated/incompletely vaccinated or vaccine refusers</td>
<td>Positive/unknown —**</td>
<td>HBIG x1</td>
<td>Complete vaccination</td>
</tr>
<tr>
<td>Negative</td>
<td>—</td>
<td>None</td>
<td>Complete vaccination</td>
</tr>
</tbody>
</table>

**Abbreviations:** HCP = health-care personnel; HBSAg = hepatitis B surface antigen; anti-HBs = antibody to hepatitis B surface antigen; HBIG = hepatitis B immune globulin.

* HBIG should be administered intramuscularly as soon as possible after exposure when indicated. The effectiveness of HBIG when administered >7 days after percutaneous, mucosal, or nonintact skin exposures is unknown. HBIG dosage is 0.06 mL/kg.

† Should be performed 1-2 months after the last dose of the HepB vaccine series and 4-6 months after administration of HBIG to avoid detection of passively administered anti-HBs using a quantitative method that allows detection of the protective concentration of anti-HBs (≥10 mIU/mL).

§ A responder is defined as a person with anti-HBs ≥10 mIU/mL after ≥3 doses of HepB vaccine.

¶ A nonresponder is defined as a person with anti-HBs <10 mIU/mL after ≥6 doses of HepB vaccine.

** HCP who have anti-HBs <10mIU/mL or who are unvaccinated or incompletely vaccinated, and sustain an exposure to a source patient who is HBSAg-positive or has unknown HBSAg status, should undergo baseline testing for HBV infection as soon as possible after exposure, and follow-up testing approximately 6 months later. Initial baseline tests consist of total anti-HBc; testing at approximately 6 months consists of HBSAg and total anti-HBc.

[https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6210a1.htm](https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6210a1.htm)
OSHA Requirements

  - Facility is required to have an Exposure Control Plan (ECP)
  - Requires training of the HCW upon hire and annually on the Exposure Control Plan and how to manage a bloodborne pathogen exposure.

- Occupational Injury and Illness Recording and Reporting (29 CFR 1904)

Model ECP:
Influenza

- Virus–RNA genome types A, B, C
- Acute respiratory illness in winter seasons
  - Most common strain: A
- Occurrence: world-wide; pandemics
- Mild or severe, can cause death
- Transmitted via large particle droplets person to person by direct and indirect contact
- Incubation period: 1–4 days
- Communicable: Adult: a day before symptoms up to 5 days after; Children: 6 days before onset up to 7 days or more after
- Lab: flu swab–PCR
Influenza Symptoms

Symptoms of Influenza

Central
- Headache

Systemic
- Fever
  (usually high)

Muscular
- (Extreme) tiredness

Joints
- Aches

Nasopharynx
- Runny or stuffy nose
- Sore throat
- Aches

Respiratory
- Coughing

Gastric
- Vomiting
CMS Requires Healthcare Facility to:

- Offer influenza vaccination annually to HCWs
- Maintain influenza vaccination records
- NHSN monitoring in the Healthcare Personnel Module for Inpatient Hospitals, Inpatient Rehab, LTAC, and Cancer Hospital

The Joint Commission:

- Set incremental goals for influenza vaccination consistent with achieving 90% rate by year 2020.
- Influenza vaccination program
  - Include influenza vaccination rates
  - Document/evaluation declinations
- Pandemic influenza policy
- HCW influenza education on hire/annually
Influenza Prevention & Control

- Prevention & control:
  - Influenza vaccine
    - Standard trivalent
    - High-dose trivalent $\geq 65$ years
    - Recombinant trivalent - egg-free
    - Trivalent with adjuvant $\geq 65$ years
    - Quadrivalent
  - Recommended for all $\geq 6$ months
  - Droplet precautions
  - Negative pressure - aerosolized procedure
  - Hand hygiene/respiratory hygiene/cough etiquette

- Treatment: Tamiflu, Relenza, Rapivab, Xofluza
CMS requires facility to have in place a protocol for monitoring & evaluating trends of employee illness
- A call out log should be maintained
  - Include HCW illness (respiratory, GI, etc.)
- Patterns/trends of HCW illness should be routinely evaluated to determine outbreaks and action taken as needed
- Infection Preventionist should be notified if trends are noted
- Share tabulation of illnesses at oversite committee
CMS requires:
- TB screening of residents on admission
- Immunization status documented on admission: Pneumococcal, Influenza, etc.
- Influenza vaccinations offered annually
- Documentation in medical record of education on the benefits and potential side effect of each vaccination offered
- Maintain records of resident’s immunization status main
Facility should have in place an employee health policy
Policy should include work exclusion of staff with infectious diseases
TB screening should be done on hire for all staff and annually based on risk assessment and state regulations
Hepatitis B vaccination should be offered on hire to staff who are at risk of exposure to BBFs.
Influenza vaccination should be offered annually to healthcare workers and residents.
Healthcare worker should be educated on the facility’s Exposure Control Plan on hire and annually.
Resources

- Occupational Safety & Health Administration (OSHA) Bloodborne Pathogen and Needlestick Prevention Standard: https://www.osha.gov/SLTC/bloodborneopathogens/index.html
Surveillance & Disease Reporting
Objectives

➢ List the elements of an effective surveillance program
➢ List the steps in an outbreak investigation
➢ Know the reporting requirements to public health
Surveillance Plan

- CMS requires Nursing Home to have a written surveillance plan:
  - Based on the facility’s risk assessment
  - Outlines activities for monitoring and tracking infections
  - Use of a data collection tool
  - Use of established criteria (e.g., CDC National Safety Healthcare Network (NHSN))
  - Includes system for early detection and management of infectious residents at time of admission, for example, MDRO, C. difficile, antibiotic use, etc.

Surveillance Plan (Cont.)

➢ Facility must have a written surveillance plan:
  ➢ Includes system for staff to promptly notify the Infection Preventionist of potentially infectious residents, so precautions can be implemented, including lab reports, such as MDRO, C. difficile, etc.
  ➢ Plan includes system to follow-up on clinical information when residents are transferred to acute care hospital for management of suspected infections.
  ➢ Report to Quality Assurance (e.g., quarterly)
  ➢ Follow-up response to surveillance data (e.g., outbreaks)
  ➢ Surveillance report summarized annually
Recommended Practices for Surveillance

I. Assess the population
II. Select the outcome or process for surveillance
III. Use surveillance definitions
IV. Collect surveillance data
V. Calculate and analyze infection rates
VI. Apply risk stratification methodology
VII. Report and use surveillance information
I. Assess the Population

➢ What infections occur most frequently?
➢ What are the greatest opportunities to prevent infections?
➢ What are our most frequently performed procedures?
➢ What types of patients increase liability and/or costs for our facility?
Recommended Practices for Surveillance

II. Select the outcome or process for surveillance

- **Outcome**—the result of care or performance
  - Infection
  - Patient satisfaction

- **Process**—series of steps that result in an outcome; adherence to policies and recommended practice
  - Immunization
  - Use of personal protective equipment
  - Hand hygiene
Outcome Measures

Examples:

➢ CAUTI per 1000 Foley catheter days
➢ CLABSI per 1000 central line days
➢ CDI per 10,000 patient days

➢ Hospital Onset (HO) cases for incidence of CDI
➢ Community Onset (CO) cases for prevalence of CDI
Process Measures

Examples:

➢ CAUTI prevention: % Foley catheter with appropriate interventions
➢ CLABSI prevention: % adherence to CLIP bundle
Surveillance Methodology

- Total (or Whole) house
  - Monitor all infections
  - Time consuming
  - Uses overall rates
  - Usually not risk adjusted

- Targeted (Priority Directed)
  - Target units
  - Risk adjusted rates (e.g., devices)
  - High risk, high volume, problem prone
  - Preventable HAIs
III. Use surveillance definitions

➢ Use written definitions to ensure accuracy of applying case definitions

➢ E.g., NHSN surveillance definitions

Clinical Definitions vs. Surveillance Definitions

- **Clinical Definitions (Diagnosis)**
  - Used for a single patient
  - For diagnosis and therapeutic decisions

- **Surveillance Definitions**
  - Applied uniformly to a population
  - For identification of trends for prevention, control & research
  - Use only specific, predetermined data elements
Recommended Practices for Surveillance

IV. Collect surveillance data

- Data collectors should include trained IP staff and others with responsibility
- Limit collection only to what is needed
- Utilize electronic records to retrieve data when possible
Prospective vs. Retrospective

➢ Concurrent or prospective
- Initiated when patient is still under the care
  - Advantages:
    • Ability to capture data in real time
    • Interview caregivers
    • Observe findings not recorded in MR

➢ Retrospective:
- Closed MR review after patient is discharged
  - Advantages:
    • Allows comprehensive review of sequential events
    • Efficient
  - Disadvantages: does not allow for prompt intervention
Numerator Data Collection

- **Numerator**: the “event” being measured
  - Example:
    - HAIs identified through active surveillance: CLABSI, CAUTI

- **Denominator**: Population at risk or total of all possible events
  - Example: age, birthweight, ASA score
V. Calculate and analyze infection rates
VI. Apply risk stratification methodology
Calculating Rates/Ratios by Denominator Type

Total population at risk (examples):

➢ 5 SSIs \( \times 100 = 3.33 \) 
   150 colon surgeries

➢ 4 CAUTIs \( \times 1000 = 1.6 \) 
   2500 urinary catheter days

Total number of events possible (example):

45 hand hygiene (HH) observations \( =0.82 \) or 82%
55 opportunities for HH

30 CLIPS w/100% compliance \( =0.86 \) or 86%
35 central line insertions
Recommended Practices for Surveillance

➢ Apply risk stratification methodology examples:
  ➢ Surgical site infections by wound class
  ➢ Standardized infection ratio (SIR)
  ➢ Catheter–associated UTI
  ➢ Central line–associated BSI
Test of Significance

- Answers questions such as:
  - Are my infection rates higher or lower than the national rates?
  - Are changes in my rate over time meaningful?

- P-value
  - If value is greater than 0.05, difference is not statistically significant

- Confidence interval
  - If the range of values includes 1.0, your data are not statistically significant
VII. Report and use surveillance information

- Report to healthcare providers most able to impact patient care
- Report in a manner to stimulate process improvement
- Use visual displays of data
  - Tables and line lists
  - Bar Charts
  - Pie Chart
  - Line graphs of histograms
Facility should have a written plan for outbreak response which includes a definition, procedures for surveillance and containment, a list of syndromes or pathogens for which monitoring is performed.

https://qsep.cms.gov/data/252/A_NursingHome_InfectionControl_Worksheet11-8-19508.pdf
Outbreak Definition

An increase in the incidence of a disease above what is normally expected.

EBOLA OUTBREAK

Graph 1: Total suspected, probable, and confirmed cases of Ebola virus disease in Guinea, Liberia, and Sierra Leone, March 25, 2014 - February 14, 2016, by date of WHO Situation Report, n=28603.
Background

Outbreaks should be suspected when:
- HAIs or adverse events above baseline rate
- Unusual microbe or adverse event occurs

Outbreaks may be due to:
- Lapse in infection prevention and clinical practice
- Contaminated or defective products/devices
  - At time of production (intrinsic contamination)
  - During use (extrinsic contamination)
- Colonized or infected healthcare worker (HCW)
- Visitors with an infectious disease (e.g., influenza)
Epidemiological Investigations

- Areas that must be investigated include:
  - Source(s)
  - Pathogen(s)
  - Host(s)
  - Mode(s) of transmission
Goal of Outbreak Investigation

- To control the outbreak by identifying and modifying contributing factors
- To develop and implement control measures to prevent reoccurrence.
Components of an Outbreak Investigation (Initial)

1. Confirm Presence of an Outbreak
2. Alert Key Partners about the investigations
3. Perform a literature search
4. Establish a preliminary case definition
5. Develop a methodology for case finding
6. Prepare an initial line list and epidemic curve
7. Observe and review potentially implicated patient care activities
8. Consider whether environmental sampling should be performed
9. Implement control measures
1. Confirm Presence of an Outbreak (Verify Diagnosis)

- Review clinical findings and lab results
- Review the medical record
- Review historic and comparative data
2. Alert Key Partners

- Notify key partners
  - Administration
  - Risk Management
  - Microbiology Lab
  - Public Affairs/Marketing
  - Public Health Officials

- Institute early control measures
3. Perform Literature Review

- Critical step in investigation
- Identify possible sources
- Insight into methodology of investigation
- Literature review pathways
  - Control of Communicable Disease in Man
4. Establish Initial Case Definition

- Develop specific criteria for case definition
  - Narrow definition initially to focus efforts
  - May need to broaden definition depending on pathogen
5. Develop Methodology for Case Finding (Search for Other Cases)

Example to consider for Case Finding:

- Review lab records
- Review surveillance records
- Discussions with HCW in affected areas
- Surveillance cultures to identify cases
  - Point-prevalence survey
6. Prepare Line List & Epidemic Curve

➢ Single most important tool
➢ May include for example:
  ➢ Patient signs & symptoms
  ➢ Medications
  ➢ Procedures
  ➢ Consults
  ➢ Patient locations
  ➢ Contact with HCW
➢ Resource for line listing:
  ➢ Medical record
  ➢ ADT information
  ➢ Staff interviews
The epidemic curve is used to:
- Determine whether source of infection was common, propagated (continuing), or both.
- Identify the probable time of exposure of cases to source(s) of infection
- Identify probable incubation period
- Determine if problem is ongoing

An epidemic curve is a histogram
- Cases are plotted by date of onset of illness
- Time intervals based on incubation or latency period of the disease and length of the period over which cases are distributed.
Important points:

➢ Patients may be in incubation period before clinical infection
➢ Exposures in HCF are often ongoing & organisms can be transmitted patient to patient

Thus, the shape of the curve from a common source in a HAI outbreak may look different from a foodborne outbreak.
Patterns of Outbreaks

- **Common source:**
  - Cases have the same origin (e.g., Salmonellosis following a picnic exposure).
  - Exposure may be continuous or intermittent.

- **Propagated Source:**
  - Single exposure, (e.g., Measles case).
  - Infections are transmitted from person to person
    - Cases are not attributed to an agent transmitted from a single source.
  - Usually occurs over a longer time frame (e.g., Chicken pox).
  - Secondary and tertiary cases occur.
7. Observe/Review Potentially Implicated Patient Care Activities

- Observe infection control practices
- Ask HCW questions:
  - Do you always perform the procedure this way?
  - Do other HCWs perform it differently?
  - What are the challenges to maintaining good technique?
  - What do you think caused the outbreak?
  - What procedures or medications might I be missing that are not in the chart?
8. Consider Environmental Sampling

- Can be expensive and misleading
- Consider performing environmental sampling only after making the line list and doing observations.
- Discuss with Micro first:
  - Can they process the culture?
  - Optimal method of collection?
- Culture only possible vectors of transmission
- Culture item that makes the most sense
9. Implement Initial Control Measures

- Driven by findings from line list and observations
  - E.g., strong association with a procedure or observation of infection control breaches
- Reinforce education on infection prevention and control compliance
- Develop a plan to ensure compliance
Components of the Follow-up Investigation

1. Refine the case definition
2. Continue case finding and surveillance
3. Review regularly control measures
4. Consider whether an analytic study should be performed
   a. Case–control study
   b. Expensive and time consuming
   c. Can be used as teaching tool
Facility Required to Notify Public Health Authorities of Reportable Diseases

Facility should have an effective surveillance plan in place and include all the required elements.

Facility should have a policy that includes how outbreaks will be investigated including a list of the steps in an outbreak investigation.

Reportable diseases should be promptly reported to the public health authorities.
Bibliography

- APIC Text. Chapter 11 & 12
- https://www.cdc.gov/hai/outbreaks/index.html
Standard Precautions
Outline

➢ Standard precautions
➢ Hand hygiene
➢ Competency-based training
➢ Audit & Feedback
➢ Transmission-based precautions
➢ Use of personal protective equipment
➢ Respiratory hygiene & cough etiquette
➢ Injection safety and point of care testing (POCT)
Objectives

Learner will be able to:

➢ Demonstrate appropriate hand washing hygiene
➢ Understand the importance of competency-based training, auditing and feedback
➢ Define what standard precautions is
➢ List the three transmission-based precautions
➢ Demonstrate how to perform cough etiquette
➢ Understand the measures for injection safety
Standard Precautions

Definition: Treat all blood and body fluid if potentially infectious material

- Perform hand hygiene
- Use respiratory and cough etiquette
- Use personal protective equipment when indicated
- Perform safe work practices
- Maintain clean environment
- Perform safe injection practice
Standard Precautions

- Facility should have a policy on standard precautions which includes selection and use of personal protective equipment (PPE) (e.g., indications, donning/doffing)
- PPE supplies (e.g., gloves, gowns, mask) should be readily available in in resident care area
- Gloves should be worn if contact to blood/body fluids, mucous membranes, or non-intact skin
- Gloves are removed after contact with blood/body fluids, mucous membranes, or non-intact skin and hand hygiene is done
- Facemask should be worn when caring for residents with new acute cough or respiratory symptoms
- Appropriate precautions worn during aerosol-producing procedures (e.g., facemask, preferably N95 respirator, face shield)
- PPE worn when splashes or sprays of body fluids is anticipated (e.g., gown, gloves, mask and eye protection)
Hand Hygiene Policy

- Facility should have a hand hygiene policy
  - Policy should promote preferential use of alcohol-based hand rub (ABHR) over soap and water in most clinical situations.
  - Policy should list when ABHR can be used and when hands should be washed with soap and water
  - The steps in performing hand hygiene should be included in the policy

https://qsep.cms.gov/data/252/A_NursingHome_InfectionControl_Worksheet11-8-19508.pdf
Hand Hygiene

- Use plain/antimicrobial soap:
  - When hands are visibly soiled
  - Before eating
  - After using the restroom
  - If exposed to a spore forming organism
    - E.g., *Clostridioides difficile* (*Clostridium difficile*)

- Use alcohol hand rubs:
  - Before and after direct patient contact
  - Before donning gloves and after removing gloves
  - Before insertion of invasive devices
  - After contact with items in patient care area
  - After moving from contaminated site to clean site.
Your 5 Moments for Hand Hygiene

1. Before touching a patient
2. Before clean/aseptic procedure
3. After body fluid exposure risk
4. After touching a patient
5. After touching patient surroundings

https://www.who.int/images/default-source/ipc/ipc/5moment-tb.png?sfvrsn=70325401_7
Hand Hygiene Steps

- Alcohol-based hand rub (60–95% alcohol)
  - Use adequate amount
  - Rub all surfaces of hands until dry for at least 20 seconds

- Soap and water:
  - Wet hands with cleaning running water making sure not too hot
  - Apply soap to all skin surfaces and under rings for at least 20 seconds
  - Rinse hands thoroughly
  - Dry hands with paper towel
  - Turn faucet off with paper towel

- Sinks dedicated to hand hygiene
Hand Hygiene Steps—Watch a Video

- Who Hand Washing Video
- John Hopkins Hand Washing Video—Who Steps

Hand Hygiene Supplies

- Hand hygiene supplies should be readily available (e.g., soap, water, paper towels and alcohol-based hand rub) in resident care areas.
- Alcohol-based hand sanitizer should be accessible, for example:
  - Entrance to facility
  - Entrance to resident rooms
  - In resident room (as appropriate for resident population)
  - Staff workstation
  - Therapy rooms
  - Other convenient location
- Having supplies readily accessible will promote compliance to hand hygiene.
Facility should not add soap to a partially empty soap dispenser. This practice of “topping off” dispensers can lead to bacterial contamination of soap.
Hand Hygiene Education & Competency

- All personnel should receive training and *competency validation* on hand hygiene on hire and at least annually.

- The facility should routinely audit and document hand hygiene adherence in all departments (e.g., nursing staff, therapy staff, physicians, PA, NP, dietary, environmental service, contract staff, etc.)
  - Recommend use of trained auditors: secret shoppers in each department/unit

- Feedback of audit results should be provided routinely to the staff and committees as appropriate.

- Residents should be provided hand hygiene education (e.g., before meals, after restroom)
What is Competency-Based Training?
Healthcare Personnel IP Competency: The proven ability to apply essential knowledge, skills, and abilities to prevent the transmission of pathogens during the provision of care.

Healthcare Personnel IP Competency-Based Training: The provision of job-specific education, training, and assessment to ensure that healthcare personnel possess IP competency.

Competency Assessment: The verification of IP competency through the use of knowledge-based testing and direct observation. If direct observation is not included as part of a competency assessment, an alternative method to ensure that healthcare personnel possess essential knowledge, skills, and abilities should be used. See https://www.cdc.gov/hai/prevent/infection-control-assessment-tools.html
Each infection prevention domain in the ICAR describes a comprehensive competency-based training program consisting of several elements.

Some elements may be required by state or federal laws and rules or accrediting organizations. Other elements may be aspirational goals.

When an element is not required or evidence-based, a facility may select and prioritize training topics, intervals, methods, and verification of competency assessment based on the infection control risk assessment, education needs assessment, job-specific employee roles, department-specific needs, or other identified need.
Competency-based Training (Cont.)

- Direct observation/return demonstration can often be integrated into other aspects of care.
- Facilities may explore other methods to assess competency other than a traditional “skills day” format.
- Potential alternative methods for competency assessment may include simulation, evidence of daily work, and provision of exemplars and quality improvement monitors.
- Document all training and competency. Ensure documentation is available for review.
Example of Hand Hygiene Competency

Audit & Feedback

- Facilities should routinely audit infection prevention processes.

- Regular systematic participatory audit processes will help the facility identify and correct gaps in a timely manner and reduce the risk to patients.

- Engage staff in auditing and performance improvement processes.

- Active, shared staff participation can extend the reach of the IPC program and facilitate staff ownership of key infection prevention processes.

- Develop systematic audit processes in which observation/audit data are collected, summarized, and routinely shared with staff and relevant committees.
Audit & Feedback (Cont.)

- The number and frequency of observations/audits, and data analysis and reporting intervals may vary based on the facility’s risk assessment. However, the extent of a systematic audit process should enhance the facility’s ability to recognize variation and trends.

- The role of audits and feedback is to assist in sustaining competency, provide assurance of policy implementation and use the data to inform performance improvement activities.

- Informal random audits and individual feedback may augment data collection but should not be the only source of data collection.
## Example of Hand Hygiene and Contact Precautions Audit Form

<table>
<thead>
<tr>
<th>Hand Hygiene and Contact Precautions Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Staff type</strong></td>
</tr>
<tr>
<td>---</td>
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<td></td>
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<td></td>
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</tbody>
</table>

https://spice.unc.edu/tools-for-success/
Transmission–based Precautions

- Facility should have policies and procedures on transmission–based precautions
- Policy should include the type of PPE to be worn with each type precaution & clinical condition (e.g., *C. difficile*, influenza)
- Staff follow CDC guidelines on proper donning/doffing PP: [https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf](https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf)
- Residents with known or suspected infections should be placed in the appropriate transmission–based precautions
- Dedicated equipment (e.g., stethoscope, blood pressure cuff) or if shared disinfected after each use.
- Resident should be placed in a private room when indicated (e.g., flu–like symptoms)
- Facility should have a process in place to manage resident if no private room is available
- Sign on door indicates type precautions and PPE to wear
- Hand hygiene should be done when removing PPE
SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. **GOWN**
   - Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
   - Fasten in back of neck and waist

2. **MASK OR RESPIRATOR**
   - Secure ties or elastic bands at middle of head and neck
   - Fit flexible band to nose bridge
   - Fit snug to face and below chin
   - Fit-check respirator

3. **GOGGLES OR FACE SHIELD**
   - Place over face and eyes and adjust to fit

4. **GLOVES**
   - Extend to cover wrist of isolation gown

Donning PPE
HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) 

EXAMPLE 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. Remove all PPE before exiting the patient room except a respirator, if worn. Remove the respirator after leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GLOVES
   - Outside of gloves are contaminated!
   - If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
   - Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
   - Hold removed glove in gloved hand
   - Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
   - Discard gloves in a waste container

2. GOGGLES OR FACE SHIELD
   - Outside of goggles or face shield are contaminated!
   - If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
   - Remove goggles or face shield from the back by lifting head band or ear pieces
   - If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container

3. GOWN
   - Gown front and sleeves are contaminated!
   - If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
   - Unfasten gown ties, taking care that sleeves don’t contact your body when reaching for ties
   - Pull gown away from neck and shoulders, touching inside of gown only
   - Turn gown inside out
   - Fold or roll into a bundle and discard in a waste container

4. MASK OR RESPIRATOR
   - Front of mask/respirator is contaminated — DO NOT TOUCH!
   - If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
   - Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
   - Discard in a waste container

5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE

Removing PPE
Transmission-based Precautions

- Contact
- Droplet
- Airborne
Contact Precautions

- Private room when possible
- Gown and gloves before entering room
- Limit patient transport
- Discard gown and gloves when leaving room
- Perform hand hygiene
- Dedicated equipment
- Clean room daily with approved disinfectant and focus on high touch areas, patient bathroom and areas close to patient

Standard precautions apply in addition to this.
Droplet Precautions

- Don a surgical mask before entering the room
- Private room for patient
- Limit patient transport
  - Mask patient if transport necessary
- Educate patient on respiratory hygiene and cough etiquette
- Hand hygiene
- Clean room daily with approved disinfectant and focus on high touch areas, patient bathroom and areas close to patient

- Standard precautions apply in addition to this.
Airborne Precautions

- Use approved respirator before entry to patient room
- Private room with airborne infection isolation room (i.e., negative pressure)
- Limit patient transport
  - If transport is necessary, place surgical mask on patient
- Educate patient on respiratory hygiene and cough etiquette
- Hand hygiene
Appropriate personnel should receive job-specific training and *competency validation* on proper use of PPE:

- At time of employment, and
- Annually

Audits on adherence to PPE use should be done routinely and documented

Results of audits of adherence to PPE use should be provided to the staff and committees as appropriate
Example of PPE Competency Validation (page 1)

<table>
<thead>
<tr>
<th>Type of validation:</th>
<th>Return demonstration</th>
<th>Orientation</th>
<th>Annual</th>
<th>Other</th>
</tr>
</thead>
</table>

Employee Name: ____________________  Job Title: ____________________

### Donning PPE:

<table>
<thead>
<tr>
<th>Competent</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

1. Perform Hand Hygiene

2. Don Gown:
   - Fully covering torso from neck to knees, arms to end of wrists.
   - Tie/syntax in back of neck and waist

3. Don Mask/Respirator:
   - Secure ties/elastic bands at middle of head and neck.
   - Fit flexible band to nose bridge
   - Fit snug to face and below chin (Fit-check respirator if applicable)

4. Don Goggles or Face Shield:
   - Place over face and eyes; adjust to fit

5. Don Gloves:
   - Extend to cover wrist of gown

### Doffing PPE: Example 1

6. Remove Gloves:
   - Grasp outside of glove with opposite glove hand; peel off
   - Hold removed glove in gloved hand
   - Slide fingers of ungloved hand under remaining glove at wrist
   - Peel glove off over first glove
   - Discard gloves in waste container

7. Remove Goggles or Face Shield:
   - Handle by head band or earpieces
   - Discard in designated receptacle if re-processed or in waste container

8. Remove Gown:
   - Unfasten ties/fastener
   - Pull away from neck and shoulders, touching inside of gown only
   - Turn gown inside out
   - Fold or roll into handle and discard

https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf

Revised 2/2020 SPICE

Respiratory Hygiene & Cough Etiquette
Respiratory Hygiene & Cough Etiquette

- Cover your mouth and nose when sneezing
- Cough in your sleeves and not in your hands
- Offer a mask to coughing patients/visitors
- Discard contaminated materials appropriately
- Perform hand hygiene
- Signs should be posted in waiting areas and facility entrance with instructions for prevention of respiratory infections
- Supplies should be readily accessible: tissue, hand sanitizer, surgical mask, waste receptacle
- Residents should be educated on cough etiquette
- Staff should be educated on respiratory hygiene and cough etiquette on hire and annually

https://www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm
Sample sign with instruction: “Cover Your Cough and Hand Hygiene”

https://www.health.state.mn.us/people/cyc/cycphceng.pdf
Injection Safety and Point of Care Testing
Injection Safety

- Facility should have a policy on injection safety including point of care testing.
- Appropriate staff should receive education and *competency validation* on injection safety and point-of-care testing on hire and annually.
- Facilities should perform routine documented audits on injection practice including point of care testing and provide feedback to the staff.
- Facility should have policies to monitor and track personnel with access to injectable controlled substances:
  - Prevent narcotic theft, drug diversion and transmission of infection with contaminated syringe/needles.

https://www.cdc.gov/injectionsafety/
Injections should be prepared in clean area with aseptic technique
- Needles and syringes should be single-use only
- Insulin pens are used for one patient only
- Rubber septum on vial is disinfected with alcohol prior to piercing
- Medication vials are entered with a new sterile needle and syringe
- Medication vial labeled as single dose is used once and only for one resident and is discarded
- Bags of IV solutions are used for only one resident (and not a source for flush solution for multiple patients)
- Medication tubing and connector is used for only one resident

https://www.cdc.gov/injectionsafety/
Multi-dose Vials

- Multi-dose vials are dated when they are first opened and discarded within 28 days unless manufacturer specifies a different (shorter or longer) date for that opened vial
  - The beyond use date is different from the expiration date for the vial
  - The multi-dose vial can be dated with either the open or the discard date as per facility policy, as long as it is clear what the date represents, and the same policy is used consistently throughout the facility

- Multi-dose vials used for more than one patient are stored appropriately and do not enter the immediate resident care area (e.g., procedure room, resident room)

- Multi-dose vials should be used for single patient use whenever possible

https://www.cdc.gov/injectionsafety/providers/provider_faqs_multivials.html
Sharps Disposal

- Sharps should be disposed of in puncture resistant sharps containers
- Sharps containers should be replaced when the fill line is reached
- Sharps containers are disposed of appropriately as medical waste
# Injection Safety Competency Validation

**Injection Safety Competency Validation**

**Point of Care Testing**

<table>
<thead>
<tr>
<th>Type of validation:</th>
<th>Return demonstration</th>
<th>Orientation</th>
<th>Annual</th>
<th>Other</th>
</tr>
</thead>
</table>

**Employee Name:** ___________________________  **Job Title:** ___________________________

## Medication Preparation

<table>
<thead>
<tr>
<th></th>
<th>Competent</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Perform hand hygiene prior to preparing or administering medications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Injections are prepared using aseptic technique in a clear area free from contamination or contact with blood, body fluids, or contaminated equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Needles and syringes are used for only one patient (this includes manufactured prefilled syringes and cartridge devices)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Rubber septum on medication vial is disinfected with alcohol prior to piercing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Medication vials are entered with a new needle and new syringe, even when obtaining additional doses for same patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Single-dose or single-use medication vials, ampules, and bags/bottles of intravenous solution are used for only one patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Medication administration tubing and connectors are used for only one patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Multi-dose vials are dated when first opened and discarded within 28 days unless manufacturer specifies a different (shorter or longer) date for that opened vial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Multi-dose vials are dedicated to individual patients whenever possible (e.g., insulin vials, lidocaine, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Multi-dose vials to be used for more than one patient are kept in a centralized medication area and do not enter the immediate patient treatment area (e.g., operating room, patient room/cubicle)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Insulin pens dedicated to only one patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Medication is administered within 1 hour of preparation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Point of Care Testing (POCT)

- Supplies necessary for adherence to safe POCT (e.g., single-use, auto-disabling lancets, sharps containers) should be readily available in resident care areas
- Hand hygiene should be performed before and after POCT
- Gloves should be worn when performing fingerstick, are removed following procedure, and hand hygiene done
- Fingerstick devices are single use only (includes the lancet and lancet holding device)
- POCT testing device (e.g., blood glucose monitor) should be cleaned/dischinfected before and after each use according to manufacturer’s instructions
## Point of Care Testing Competency Validation

<table>
<thead>
<tr>
<th>Point of Care Testing (e.g., glucometer, PT/INR)</th>
<th>Competent</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Perform hand hygiene</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Don gloves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Single-use, auto-disabling fingerstick device used for one patient only &amp; discarded into sharps container</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Individual patient dedicated glucometer (preferred) is stored to avoid cross-contamination and inadvertent use on additional patients (ideally, in the patient room)—best practice is to clean/disinfect prior to storage per manufacturer’s instructions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Shared glucometers/equipment must be cleaned and disinfected after every use per manufacturer’s instructions (if the manufacturer does not specify how the device should be cleaned and disinfected, then it should not be shared)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Gloves removed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Hand hygiene performed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Resources

- APIC Text. Chapter 27, 28 & 29
- https://www.cdc.gov/infectioncontrol/basics/standard-precautions.html
- https://www.cdc.gov/infectioncontrol/basics/transmission-based-precautions.html
- https://www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm
- https://www.cdc.gov/injectionsafety/
- CDC Hand Hygiene Guidelines
- WHO Hand Hygiene Guidelines.
- https://www.cdc.gov/training/development/
Cleaning, Disinfection and Sterilization
Objectives

➢ Differentiate between cleaning, disinfection, and sterilization.
➢ Discuss Spaulding’s classification and give an example for each type.
➢ Describe methods to reduce risk of cross contamination during reprocessing for non-critical, semi-critical, critical medical devices.
➢ List three characteristics for an ideal low-level disinfectant
Key Terms

Cleaning

- Removal of foreign material (e.g., soil, organic material) from objects. Normally accomplished using water with detergents or enzymatic products.
- *Always precedes disinfection and sterilization.*

Van Ek, 2015
Key Terms

**Disinfection**
- Destruction of disease-causing microorganisms
- Examples of disinfectants: bleach, “quats”, alcohol

**Sterilization**
- Destruction of all forms of microbial life
- Prions are a special case
- Examples of sterilants: autoclave and incineration

Van Ek, 2015
Factors Influencing Disinfection & Sterilization

- Effective cleaning
- Level of organic and inorganic material present
- Type and level of microbial contamination
- Concentration of and exposure time to disinfectant/sterilant
- Type of object
- Temperature and relative humidity
Established three levels of germicidal activity for reprocessing contaminated devices:

1. Sterilization
2. High-level disinfection
3. Low-level disinfection

Three classes of medical devices based on the risk of contamination to the patient.

1. Critical
2. Semi-critical
3. Non-critical
# Spaulding Classification

<table>
<thead>
<tr>
<th>Patient Contact</th>
<th>Examples</th>
<th>Device Classification</th>
<th>Minimum Inactivation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intact skin</td>
<td>![Example Images]</td>
<td>Non-Critical</td>
<td>Cleaning and/or Low/Intermediate Level Disinfection</td>
</tr>
<tr>
<td>Mucous membranes or non-intact skin</td>
<td>![Example Images]</td>
<td>Semi-Critical</td>
<td>High Level Disinfection</td>
</tr>
<tr>
<td>Sterile areas of the body, including blood contact</td>
<td>![Example Images]</td>
<td>Critical</td>
<td>Sterilization</td>
</tr>
</tbody>
</table>
## Critical Items

<table>
<thead>
<tr>
<th>Classification</th>
<th>Critical objects enter normally sterile tissue or vascular system, or through which blood flows.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>Sterility.</td>
</tr>
<tr>
<td>Level of Germicidal Action</td>
<td>Kill all microorganisms, including bacterial spores.</td>
</tr>
<tr>
<td>Examples</td>
<td>Surgical instruments and devices; cardiac catheters; implants; etc.</td>
</tr>
<tr>
<td>Method</td>
<td>Steam, gas, hydrogen peroxide plasma or chemical sterilization.</td>
</tr>
</tbody>
</table>

Methods for Sterilization

- Steam – Cost effective, used in Central Sterile and Immediate Use Sterilizers (IUSS)

- Ethylene Oxide (Gas) – costly and highly regulated by OSHA

- Hydrogen Peroxide – used for low temperature sterilization, has a smaller chamber than steam and more expensive
## Semi–Critical Items

<table>
<thead>
<tr>
<th>Classification</th>
<th>Semi–critical objects come in contact with mucous membranes or skin that is not intact.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>Free of all microorganisms except high numbers of bacterial spores.</td>
</tr>
<tr>
<td>Level of Germicidal Action</td>
<td>Kills all microorganisms except high numbers of bacterial spores.</td>
</tr>
<tr>
<td>Examples</td>
<td>Respiratory therapy and anesthesia equipment, GI endoscopes, thermometer, etc.</td>
</tr>
<tr>
<td>Method</td>
<td>High–level disinfection</td>
</tr>
</tbody>
</table>
Types of Semi-Critical Devices

- Flexible endoscopes
- ERCP scopes
- Cystoscopes
- Vaginal probes
- Laryngoscope blades
- Bronchoscopes

All made of materials that you can NOT autoclave!!
Reprocessing Requirements for Semi-critical and Critical Devices

- **Point of use**
  - Enzymatic spray
  - Keep moist

- **Transport**
  - Biohazard sticker
  - Closed container

- **Processing environment**
  - Flow moves dirty to clean
  - Physical separation of dirty and clean

- **IFU’s and staff education**

- **Storage**
Sterilization Monitoring Systems

- **Mechanical Indicators** – Charts for time, temperature, and pressure done on every load
- **Chemical Indicators** – Heat sensitive tape used internal and external in each load. Indicates process errors and equipment problems but is not an indicator of sterilization
- **Bowie Dick** – Daily use to check air removal in pre-vacuum steam sterilization
- **Biological Indicators** – Standardized preparations of bacterial spores resistant to sterilization
Biological Indicators (BI)

- *Bacillus atrophaeus* – Used for Gas (ETO) and dry heat
- *Geobacillus stearothermophilus* – Used for steam sterilization, hydrogen peroxide gas plasma, and liquid peracetic acid
- BI verify that all conditions for sterilization were met
- Use at least each day of sterilizer use
- Implants – BI every load
- BI are now available with 30-minute readout
Sterile Supply Storage

- Event related shelf life – package is sterile unless damaged, torn, wet, etc.
- Time related if dated with expiration date
- All packs – examine integrity, tears, dampness, excessive dust, gross soil
- Rotate to use older items first
Challenges & New Technologies in Reprocessing
Challenges in Reprocessing Overview

- Many devices have internal channels
- Compatibility of materials with chemicals
- Failure of the device over time; inspection
- Inability to thoroughly clean/disinfect all parts
- Human factors: personnel are not trained, certified, or paid well and work in poor conditions
- Desired turnaround time does not allow for adequate reprocessing
- Automated reprocessing machines are expensive
Proper Cleaning

- Items must be cleaned using water with detergents or enzymatic cleaners before processing.

- Thorough cleaning is required before disinfection and sterilization since inorganic and organic materials that remain on the surfaces of instruments interfere with the effectiveness of reprocessing.

- Cleaning reduces the bio burden and removes foreign material (organic residue and inorganic salts) that interferes with the sterilization process by acting as a barrier to the sterilization agent.
Manual Cleaning

- Essential components include:
  - Friction
  - Fluidics
Manual Cleaning – Friction

- Friction (e.g., rubbing/scrubbing the soiled area with a brush) is an old and dependable method.
- Don’t reuse Brushes
Fluidics (i.e., fluids under pressure) is used to remove soil and debris from internal channels after brushing and when the design does not allow the passage of a brush through a channel.
The most common types of mechanical or automated cleaners include:

- Ultrasonic cleaners
- Washer-sterilizers
- Washer-decontaminators
- Washer-disinfectors
Mechanical Cleaning – Ultrasonic

- Ultrasonic cleaning removes soil by a process called cavitation and implosion in which waves of acoustic energy are propagated in aqueous solutions to disrupt the bonds that hold particulate matter to surfaces.

Rutala, 2016
Mechanical Cleaning – Washer–sterilizers

- Washer–sterilizers are modified steam sterilizers that clean by filling the chamber with water and detergent through which steam is passed to provide agitation. Instruments are subsequently rinsed and subjected to a short steam sterilization cycle.

- Another washer–sterilizer employs rotating spray arms for a wash cycle followed by a steam sterilization cycle at 285°F.

Rutala, 2016
Improved Hydrogen Peroxide

- Introduced into healthcare for disinfection of noncritical environmental surfaces and patient equipment and high-level disinfection of semi-critical equipment such as endoscopes.

- Lowest EPA toxicity category (i.e., category IV) based on its oral, inhalation, and dermal toxicity. Practically nontoxic and is not an irritant.

Rutala, 2016
Washer-decontaminators/disinfectors act like a dishwasher that uses a combination of water circulation and detergents to remove soil.
Biofilms

- Micro organisms surrounded by the slime they produce
- Exists wherever surfaces contact water
- All surfaces are easily colonized
- Bacteria live in biofilm communities
- Interfere with disinfection
- Difficult to remove
Biofilm Formation

http://helios.bto.ed.ac.uk/bto/microbes/biofilm.htm / Loesche, W. 2012
Stop Biofilms at Point of Use

- Prompt device cleaning and reprocessing by either disinfection or sterilization aid in preventing biofilms from forming on surfaces.
Human Papilloma Virus

- Common sexually acquired infection and is considered the cause of cervical cancer.

- A recent study showed that a considerable number of ultrasound probes are contaminated with HPV (28 percent pre-examination).

Rutala, 2016
Endovaginal ultrasound probes are **semi-critical items** (even if covered with a sheath or probe cover) and require high-level disinfection.
Product Regulation

- Antiseptic – FDA – used on living tissue
- Chemical/sterilant – FDA – used on critical and semicritical instruments
- Hospital Disinfectant – EPA – used on non-critical items
Environmental Decontamination
## Non-Critical Items

<table>
<thead>
<tr>
<th>Classification</th>
<th>Noncritical objects will not come in contact with mucous membranes or skin that is not intact.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>Can be expected to be contaminated with some microorganisms.</td>
</tr>
<tr>
<td>Level of Germicidal Action</td>
<td>Kill vegetative bacteria, fungi and lipid viruses.</td>
</tr>
<tr>
<td>Examples</td>
<td>Bedpans; crutches; bed rails; EKG leads; bedside tables; walls, floors and furniture.</td>
</tr>
<tr>
<td>Method</td>
<td>Low-level disinfection</td>
</tr>
</tbody>
</table>

Scientific literature shows that environmental contamination plays an important role in the transmission of several key healthcare-associated pathogens including MRSA, VRE, *Acinetobacter*, norovirus, and *Clostridium difficile*. 
# How Long Germs Last in the Environment

<table>
<thead>
<tr>
<th>Pathogen (Germ)</th>
<th>Survival Time on Dry Surfaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acinetobacter spp. (ACBA)</td>
<td>3 days – 5 months</td>
</tr>
<tr>
<td>Bloodborne pathogens (hepatitis)</td>
<td>&gt; One week</td>
</tr>
<tr>
<td>Clostridium difficile (spores)</td>
<td>5 months</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>1.5 hours – 16 months</td>
</tr>
<tr>
<td>Enterococcus (VRE and VSE)</td>
<td>5 days – 4 months</td>
</tr>
<tr>
<td>Klebsiella spp</td>
<td>2 hours - &gt; 30 months</td>
</tr>
<tr>
<td>Mycobacterium tuberculosis (TB)</td>
<td>1 day – 4 months</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>6 hours – 16 months</td>
</tr>
<tr>
<td>Serratia marcescens</td>
<td>3 days – 2 months</td>
</tr>
<tr>
<td>Staph: MSSA, MRSA</td>
<td>7 days – 7 months</td>
</tr>
<tr>
<td>Streptococcus pyogenes (GAS)</td>
<td>3 days – 6.5 months</td>
</tr>
</tbody>
</table>

Environmental surfaces in patient rooms should be cleaned and disinfected on a regular basis (e.g., daily, three times per week), when surfaces are visibly soiled, and following patient discharge (terminal cleaning).

Disinfection is generally performed using an EPA-registered hospital disinfectant such as a quaternary ammonium compound or “quat”.
Ideal Characteristics for Low Level Disinfectant

- Broad spectrum
- Fast acting
- Surface compatibility
- Stable and easy to use
- Economical
Contact Time For Disinfection Of Noncritical Surfaces And Patient Care Equipment

- The Centers for Disease Control and Prevention (CDC) guideline discusses a 1-minute contact time (i.e., wet time) for low-level disinfection of noncritical environmental surfaces and patient care equipment.

- As important as disinfectant contact time is to surface disinfection nothing is more important than the thoroughness of cleaning all hand contact surfaces (e.g., environmental surfaces or patient care equipment).

Rutala, 2016
If an institution chooses to use a product with a non-achievable label claim (e.g., 10 minutes), it should prepare a formal risk assessment (see http://www.learningace.com/doc/606420/219354ffef63704bf418d26b1b8713f1/surfdisriskassess2011) to be presented to surveyors (e.g., The Joint Commission) when challenged.

Rutala, 2016
Alternatively, healthcare facilities could purchase and use, for low-level disinfection of noncritical surfaces and patient care equipment, an EPA-registered disinfectant with an achievable contact time such as a disinfectant with a 30 second to 2-minute bactericidal claim.

Rutala, 2016
"No Touch" Methods For Room Decontamination

- Ultraviolet (UV) Light
- Hydrogen Peroxide

These technologies supplement, but do NOT replace, standard cleaning and disinfection because surfaces must be physically cleaned of dirt and debris.
UV Light

- Traditionally used for the control of pathogenic microorganisms in a variety of applications, such as control of legionellosis, as well as disinfection of air, surfaces, and instruments.

- Efficacy based on light intensity, exposure time, lamp placement, and air movement patterns.

Rutala, 2016
Several systems that produce hydrogen peroxide (e.g., HP vapor, aerosolized dry mist HP) have been studied for their ability to decontaminate environmental surfaces and objects in hospital rooms.

Hydrogen peroxide vapor (HPV) has been used increasingly for the decontamination of rooms in healthcare.

HP system decontamination was shown to require more than four times longer to complete than conventional cleaning thus resulting in prolonged bed turn-over time.

Rutala, 2016
Environmental Cleaning

- Appropriate personnel should receive job-specific training and *competency validation* on hire and annually
  - This should include all the staff involved in the cleaning processes (e.g., housekeepers, nurses, nursing assistants, physical therapist, wound care nurse, etc.)

- If housekeeping services is contracted, the facility must validate that this training is provided by the contracting company.

- Supplies necessary for appropriate cleaning/disinfection should be available (e.g., EPA registered, including products effective for *C. difficile* and norovirus)

- Routine documented audits should be done with feedback provided to the staff
### Environmental Service Cleaning Checklist

**LTCF GENERAL ROOM ENVIRONMENTAL CLEANING CHECKLIST**

- **Date:**
- **Unit or Ward:**
- **Room Number:**
- **Initials of environmental services staff (optional):**

#### Evaluate the following priority sites for each resident room:

<table>
<thead>
<tr>
<th>High-touch Room Surfaces</th>
<th>Cleaned</th>
<th>Not Cleaned</th>
<th>Not Present in Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed rails</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tray table</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Call button</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote Controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bedside table</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bedside Chair</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room light switch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room inner door knob/door pull</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closet door knob/door pull</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathroom inner door knob/pull</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathroom light switch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathroom handrails by toilet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathroom sink/faucet handles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toilet seat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toilet flush handle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toilet bedpan cleaner</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shower hand holds</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Evaluate the following additional sites if these equipment are present in the room:

<table>
<thead>
<tr>
<th>High-touch Room Surfaces</th>
<th>Cleaned</th>
<th>Not Cleaned</th>
<th>Not Present in Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV /tube feeding pump control panel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wound Vacuum Control panel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheelchair-especially handles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walker/Cane handles</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[https://oregonpatientsafety.org/docs/resources/LTCF_Environmental_Cleaning_Checklist_Tool_1.pdf](https://oregonpatientsafety.org/docs/resources/LTCF_Environmental_Cleaning_Checklist_Tool_1.pdf)
# Environmental Observation Audit

## Healthcare-Associated Infections Program Adherence Monitoring

### Environmental Cleaning and Disinfection

Regular monitoring with feedback of results to staff can maintain or improve adherence to environmental cleaning practices. Use this tool to identify gaps and opportunities for improvement. Monitoring may be performed in any type of patient care location.

**Instructions:** Observe at least two (2) different environmental services (EVS) staff members. Observe each practice and check a box if adherent (“Yes”) or not adherent (“No”). In the right column, record the total number of “Yes” responses for adherent practices observed and the total number of observations (“Yes” + “No”). Calculate adherence percentage in the last row.

<table>
<thead>
<tr>
<th>Environmental Cleaning Practices</th>
<th>EVS Staff 1</th>
<th>EVS Staff 2</th>
<th>EVS Staff 3</th>
<th>Adherence by Task # Yes # Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES1. Detergent/disinfectant solution is mixed and stored according to manufacturer’s instructions.</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>ES2. Solution remains in wet contact with surfaces according to manufacturer’s instructions.</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>ES3. Cleaning process avoids contamination of solutions and cleaning tools; a clean cloth is used in each patient area, and the cloth is changed when visibly soiled.</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>ES4. Standard cleaning protocol is followed to avoid cross-contamination (e.g. from top to bottom, patient room to bathroom, and clean to dirty)</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>ES5. Environmental Services staff use appropriate personal protective equipment (e.g. Gowns and gloves are used for patients/residents on contact precautions upon entry to the contact precautions room.)</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>ES6. Hand hygiene is performed throughout the cleaning process as needed, including before and after glove use.</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>ES7. High-touch surfaces* are thoroughly cleaned and disinfected after each patient. Mark “Yes” if Fluorescent Marker Assessment Tool result is 100%; mark “No” if &lt;100%.</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>ES8. There are no visible tears or damage on environmental surfaces or equipment.</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>ES9. The room is clean, dust free, and uncluttered.</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
<td>□ Yes □ No</td>
</tr>
</tbody>
</table>

*Examples of High Touch Surfaces:
- Bed rail
- Tray table
- Side table
- Side table handle
- Chair
- In-room medical cart
- Room sink
- Room sink faucet
- Room light switch
- TV remote
- PPE container
- IV pole (“grab area”)
- Call button
- In-room cabinet
- In-room computer/keyboard
- Bathroom door knob/handle
- Bathroom sink
- Bathroom handle
- Toilet flush handle
- Toilet seat
- Bathroom faucet
- Bathroom light switch
- Paper towel
- PPE container

# of Correct Practice Observed (“Yes”): 

Total # Environmental Services Observations (“# Observed”): 

(Up to 15 Total) 

If practice could not be observed (i.e. cell is blank), do not count in total # Observed.

Adherence % = (Total “# Yes” + Total “# Observed” x 100)
# Monitoring Terminal Cleaning

## CDC Environmental Checklist for Monitoring Terminal Cleaning

<table>
<thead>
<tr>
<th>Date:</th>
<th>Unit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room Number:</td>
<td></td>
</tr>
<tr>
<td>Initials of ES staff (optional):</td>
<td></td>
</tr>
</tbody>
</table>

**Evaluate the following priority sites for each patient room:**

<table>
<thead>
<tr>
<th>High-touch Room Surfaces</th>
<th>Cleaned</th>
<th>Not Cleaned</th>
<th>Not Present in Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed rails / controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tray table</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV pole (grab area)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Call box / button</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bedside table handle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chair</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room sink</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room light switch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room inner door knob</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathroom inner door knob / plate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### “Who Cleans What??” checklist

**ROLES AND RESPONSIBILITIES - WHO CLEANS AND DISINFECTS THESE DAILY?**

<table>
<thead>
<tr>
<th>AREA</th>
<th>EVS</th>
<th>FREQ</th>
<th>NURSING</th>
<th>FREQ</th>
<th>OTHER (Specify)</th>
<th>FREQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Room</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bed rail/controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bedside cabinet and other furniture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood Pressure Cuffs/Sphygmomanometer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Call box/button and cords</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer monitor, mouse, keyboard, and cart (if present)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corridor railing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bladder scanner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dispensers for towels, soap, sanitizer, etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Door knob/handle and push plates (inside and out) to room</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeding pumps and stands</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glove boxes and holders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infusion Pumps and control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISO Holder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV Poles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Switch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi module monitor Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi module monitor touch screens</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Linen Management

- Soiled linen should be handled with minimum agitation to avoid contamination of the environment.
- Soiled linen should be bagged at point of use in leak proof bags/containers.
- The receiving area for soiled linen should be separated from the clean laundry area.
- Clean linen are packaged, transported and stored in a manner to ensure cleanliness and protected from contaminates, (e.g., covered, wrapped).
- Facility should use the manufacturer’s recommended laundry cycles, water temperatures and chemical/detergent products.
- A hand washing station and PPE should be available in areas where non-bagged soiled linen is handled.
- Linen management policy and should include cleaning and disinfection of the linen carts or for cart exchange off premises.
Other Tips for Linen Management

- Never carry soiled linen against the body
- Carefully roll up soiled linen to prevent contamination in the environment
- Food/drink or personal items should not be in the linen processing areas
- Ideally, soiled linen area should have negative pressure to other areas
- Practice good hand hygiene before and after removal of gloves
- Always wear gloves when handling soiled linen
References

- https://www.cdc.gov/hai/prevent/resource-limited/laundry.html
Antibiotic Stewardship
Objectives

The learner will be able to:

➢ Explain why it is important to have an antibiotic stewardship program
➢ List the core elements of an antibiotic stewardship program

Antibiotic stewardship refers to a set of commitments and activities designed to “optimize the treatment of infections while reducing the adverse events associated with antibiotic use.”
Why Do We Need Antibiotic Stewardship?

NEW CDC DATA
MORE THAN HALF OF ANTIBIOTIC PRESCRIBING FOR SELECTED EVENTS IN HOSPITALS WAS NOT CONSISTENT WITH RECOMMENDED PRESCRIBING PRACTICES

ANTIBIOTIC PRESCRIBING WAS NOT SUPPORTED IN:

- 79% OF PATIENTS with community-acquired pneumonia
- 77% OF PATIENTS with urinary tract infections
- 47% OF PATIENTS prescribed fluoroquinolone treatment
- 27% OF PATIENTS prescribed intravenous vancomycin antibiotic

HOSPITAL PRESCRIBERS & PHARMACISTS CAN IMPROVE PRESCRIBING:

- Optimize antibiotic selection
- Re-assess antibiotic treatment when the results of diagnostic testing are available
- Use the shortest effective duration of therapy

FIND RESOURCES ON HOW TO IMPROVE HOSPITAL ANTIBIOTIC USE AND HELP FIGHT ANTIBIOTIC RESISTANCE:

https://www.cdc.gov/antibiotic-use/core-elements/hospital.html
UP TO 70% OF NURSING HOME RESIDENTS RECEIVED one or more COURSES OF SYSTEMIC ANTIBIOTICS IN A YEAR

Summary of the Core Elements of Antibiotic Stewardship Program

**Leadership commitment**
Demonstrate support and commitment to safe and appropriate antibiotic use in your facility

**Accountability**
Identify physician, nursing and pharmacy leads responsible for promoting and overseeing antibiotic stewardship activities in your facility

**Drug expertise**
Establish access to consultant pharmacists or other individuals with experience or training in antibiotic stewardship for your facility

**Action**
Implement at least one policy or practice to improve antibiotic use
Summary of the Core Elements of Antibiotic Stewardship Program (Cont.)

**Action**
Implement *at least one* policy or practice to improve antibiotic use

**Tracking**
Monitor *at least one process* measure of antibiotic use and *at least one outcome* from antibiotic use in your facility

**Reporting**
Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and other relevant staff

**Education**
Provide resources to clinicians, nursing staff, residents and families about antibiotic resistance and opportunities for improving antibiotic use
CMS Requirements for Antibiotic Stewardship in Nursing Homes

- Written antibiotic stewardship program approved by leadership
- Person responsible for the program identified by leadership
- Written protocol for antibiotic prescribing
- Infection assessment tools or management algorithms is used for antibiotic use for one or more infections.
- Report summarizing antibiotic use from pharmacy data created in the last 3 months.
- Summarized antibiotic resistance (i.e., antibiogram) based on laboratory data within the past 18 months
- Clinical leadership provides clinical subscribers with feedback on their antibiotic prescribing practices
- Clinical leadership has provided training on antibiotic stewardship to all nursing staff and clinical providers with prescribing privileges within the last 12 months
- Facility has educational materials on antibiotic stewardship for residents
Resources

- https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html
- APIC Text, Chapter 33
Infection Control Assessment in Nursing Homes: Surveillance Rounds
This presentation will demonstrate how to conduct surveillance rounds in a long-term care facility

- Healthcare facilities should maintain a clean and sanitary environment for patients, visitors and staff.
- Reducing bioburden in the environment will decrease the potential for transmission of harmful microorganisms.
- Cleaning and disinfection of the environment and equipment is a key factor in reducing the risk of infections.
- Adherence to basic infection prevention and control practices will prevent healthcare acquired infections.
Objectives

- Assess the facility for a clean and sanitary environment
- Assess the hand hygiene practice
- Assess for proper use of PPE
- Evaluate injection safety including point of care testing
Other elements that we will assess are:

- Environmental Cleaning
- Equipment Disinfection
- Urinary Catheter Care
- Linen Management
- Central Line Care
- Transmission-based Precautions
- Respiratory Therapy
- Wound Care
CMS Oversite for Nursing Homes

- Nursing homes are routinely assessed by the Centers for Medicare & Medicaid (CMS) for compliance with the Infection Control Condition of Participation.
- The assessment includes a combination of observation, interviews with facility staff, patients and their family/support persons, and a review of any necessary infection control program documentation.
- This presentation will assist you in assessing a facility’s compliance with infection control during observation rounds.
Areas we will visit

- Front Lobby
- Hallways
- Day Room/Dining Area
- Clean Utility
- Clean Linen Storage
- Soiled Utility Room
- Nursing Station
- Medication Room/Cart
- Wound Care Cart
- Shower Room
- Resident Room
- Rehabilitation/Gym
- Laundry Processing Area
Front Lobby
Lobby

- Front entrance/lobby should have the following:
  - Signage asking persons not to visit if signs of respiratory illness
  - Respiratory hygiene and cough etiquette station, which includes:
    - Signage with instructions to perform “Cough Etiquette” and “Clean Hands”
    - Facemask to offer to coughing persons
    - Tissue
    - Receptacle to discard tissue
    - Hand sanitizer
Lobby

- Furniture should be in good repair
  - No cracks or tears
  - Preferable a cleanable material
  - Facility should routinely check furniture throughout the facility and replace as needed

- Ceiling tiles should have no stains or gaps
  - Check throughout the facility

- Floors, furniture and walls are clean
  - Policies in place to address how often areas cleaned in the facility, responsibility, how often, what product?

- Check lobby restroom
  - Is it clean?
  - No leaks under sink or around toilet
  - Soap and paper towels available
Hallways
Hallways

- Check hallways for debris on floors
- Are walls free from stains, holes or tears?
- Items should not be left stored in hallways (e.g., chairs, beds, etc.)
- Hand sanitizer located at each hallway entrance
  - Not over outlets, and at least 6 inches away from outlets
- Is hand sanitizer readily available for each resident room?
  - Within date?
- Observe for adherence to hand hygiene in hallways and in all locations
Wash hands or use hand sanitizer? Observe staff/Quiz staff

- Use plain/antimicrobial soap:
  - When hands are visibly soiled
  - Before eating
  - After using the restroom
  - If exposed resident with suspected or confirmed:
    - *Clostridioides difficile* (*Clostridium difficile*)
    - Norovirus

- Use alcohol hand rubs (preferred when none of the above):
  - Before and after direct patient contact
  - Before donning gloves and after removing gloves
  - Before insertion of invasive devices
  - After contact with items in patient care area
  - After moving from contaminated site to clean site.
Hand Hygiene Steps

- Alcohol-based hand rub (60-95% alcohol)?
  - Use adequate amount
  - Rub all surfaces of hands until dry for at least 20 seconds
- Soap and water:
  - Wet hands with cleaning running water making sure not too hot
  - Apply soap to all skin surfaces and under rings for at least 20 seconds
  - Rinse hands thoroughly
  - Dry hands with paper towel
  - Turn faucet off with paper towel
- Sinks dedicated to hand hygiene?
- Hand lotion approved by facility and is compatible with hand soap?
Are staff following?
Observe hand hygiene practice

- Are staff following these steps?
- Is hand hygiene competency-based training done on hire and annually?
- Are routine audits done?
- Are all staff audited for hand hygiene practice, not just nursing staff?
- Do you use secret shoppers to perform the audits?
- How is feedback provided to the staff?

- [Who Hand Washing Video](https://www.who.int/images/default-source/health-topics/screenshot-2020-03-24-at-07-27-20.png?sfvrsn=919e6ac0_7)
- John Hopkins Hand Washing Video - Who Steps
Day Room/Dining Area
Day Room/Dining Area

- Is the day room/dining area clean? Are tables disinfected after each meal?
- Do the residents wash their hand before meals? Are hand hygiene supplies readily available in the area? If resident is unable to wash their hands do staff assist them?
- If there is a beverage station, are staff serving the residents to prevent potential contamination from residents self-serving?
- Sink free from clutter and dedicated for hand hygiene?
- Items are not stored within 36 inches of sink, or a splash guard is used?
- Food refrigerator contains only food/nutrition for residents?
- Food refrigerator monitored daily, recorded and within range
- Look in cabinets and validate proper storage
Day Room/Dining Area: Ice

- How is ice handled if in chest? Do they use a scoop? How is the scoop stored? Is a liner used?
  - Scoop should be used to obtain ice and stored in a separate container and not left in ice. Ice chest should be emptied and disinfected routinely, for example, each shift. Ideally, a liner should be used.
  - Metal scoops are better to use than plastic, since plastic scoops can have ridges.
- How often is the ice machine cleaned on the outside? Internally?
  - Facility should have a policy in place and follow manufacturer’s IFU (e.g., ice machine is cleaned/sanitized internally by maintenance quarterly & documented.)
  - Is the ice machine clean?
Clean Utility/Storage
Clean Utility/Storage

- Is clean and dirty separated?
- Any equipment brought into the room are disinfected first?
- Are floors, counters and walls clean?
- Supplies are stored 8 inches from floor and 18 inches from sprinkler heads?
- Supply carts have solid bottoms and are clean and dust free?
- Not items stored within 36 inch of sink or splash guard is used?
- Supplies are within date?
- No corrugated shipping boxes are in the clean storage area?
- Supplies stored away from windows, vents
- No personal items are stored in the room (e.g., personal lab jacket, phone, purse)
Clean Storage: Personal Protective Equipment (PPE)

- PPE (gowns, gloves, masks, and protective eye wear) stored in each resident care area
- Have the appropriate staff had competency-based training on hire and annually?
- Are routine audits with feedback of the results to the staff being done?
- Observe PPE donning/doffing practice at the facility
  - Are staff following the proper sequence when donning/doffing?
  - Is hand hygiene being done after removal of PPE?
SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN
   - Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
   - Fasten in back of neck and waist

2. MASK OR RESPIRATOR
   - Secure ties or elastic bands at middle of head and neck
   - Fit flexible band to nose bridge
   - Fit snug to face and below chin
   - Fit-check respirator

3. GOGGLES OR FACE SHIELD
   - Place over face and eyes and adjust to fit

4. GLOVES
   - Extend to cover wrist of isolation gown

HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE)

Example 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. Remove all PPE before leaving the patient room except a respirator, if worn. Remove the respirator after leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GLOVES
   - Outside of gloves are contaminated
   - If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
   - Using a gloved hand, grasp the inner sides of the other gloved hand and pull off first glove
   - Hold removed glove in gloved hand
   - Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
   - Discard gloves in a waste container

2. GOGGLES OR FACE SHIELD
   - Outside of goggles or face shield are contaminated
   - If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
   - Remove goggles or face shield from the base by lifting headband or ear pieces
   - If item is reusable, place in designated receptacles for reprocessing. Otherwise, discard in a waste container

3. GOWN
   - Gown front and sleeves are contaminated
   - If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
   - Unfasten gown ties, taking care that Sleeves don’t catch your body when removing fastens
   - Pull gown away from neck and shoulders, brushing inside of gown only
   - Turn gown inside out
   - Fold or roll into a bundle and discard in a waste container

4. MASK OR RESPIRATOR
   - Front of mask/respirator is contaminated — DO NOT TOUCH
   - If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
   - Grasp bottom ties or elastic of the mask/respirator, then the arms at the top, and remove without touching the front
   - Discard in a waste container

5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE

OR
### Spaulding Classification

<table>
<thead>
<tr>
<th>Patient Contact</th>
<th>Examples</th>
<th>Device Classification</th>
<th>Minimum Inactivation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intact skin</td>
<td><img src="example1.png" alt="Example" /></td>
<td>Non-Critical</td>
<td>Cleaning and/or Low/Intermediate Level Disinfection</td>
</tr>
<tr>
<td>Mucous membranes or non-intact skin</td>
<td><img src="example2.png" alt="Example" /></td>
<td>Semi-Critical</td>
<td>High Level Disinfection</td>
</tr>
<tr>
<td>Sterile areas of the body, including blood contact</td>
<td><img src="example3.png" alt="Example" /></td>
<td>Critical</td>
<td>Sterilization</td>
</tr>
</tbody>
</table>
Disinfection/Sterilization

- Is the space for disinfection/sterilization adequate and designed to flow from contaminated to clean?
  - Precleaning, Soaking, Rinsing, Drying, Packaged and Reprocessed
- Are contaminated items transported from point of care to decontamination area in a closed container with a biohazard label
- Is precleaning done first at point of use, for example, sprayed with an enzymatic solution to keep it moist. (This will reduce the biofilm)
- Is there a sink for hand hygiene, one for precleaning and one for rinsing.
- Is a brush needed for cleaning the device, internal parts? Does the brush fit the size of the lumen?
Disinfection/Sterilization

- Are the appropriate solutions used and manufacturer’s Instructions for Use (IFUs) followed?
- Is the high-level disinfectant solution being monitored for concentration, appropriate dilution, exposure time and temperature and documented? (follow product’s IFU) and item rinsed well after soak? (Check logs)
- Peel packs should not be folded, and sharps protectors should be on the tips
  - Check at least 10 packages for compliance
- PPE is readily available in the disinfection/sterilization area
- If using an autoclave, is a biological indicator ran each day of use and results recorded? (Check logs)
- Are chemical indicators included in the peel packs for each item sterilized?
- Have staff had competency-based training on hire, annually, and again with new products/equipment?
Equipment & Non-critical Items

- Reusable equipment (e.g., vital sign equipment) is disinfected after each use
- Reusable equipment is properly stored
- Supplies for cleaning/disinfection of reusable equipment is readily available
- EPA registered disinfectants are used and are approved by the facility
- Staff have been educated on the contact time for each disinfectant they are using?
- Does facility have a policy that outlines who is responsible for cleaning/disinfecting equipment/devices, what product to use and how often to disinfect?
Housekeeping

- Observe housekeeping practice for compliance to policies:
  - No food/drink on the housekeeping cart
  - Staff are using an EPA-registered disinfectant
    - Following the disinfectant’s instructions for use (IFU)
    - Contact time of the disinfectant
    - Proper dilutions
  - Wearing appropriate PPE when cleaning
  - What product used when disinfecting room with *C. difficile*
  - Discuss the role of the environment in transmission of pathogens
    - Discuss study as an example: Shaughnessy et al. Infect Contr Hosp Epidemiol. 2011 (read article via PubMed)
Clean Linen Storage

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Clean Linen

- Is the room clean and free from dust and debris?
- Is clean linen covered OR stored in a separate closet with no other items?
- Do linen carts have a solid bottom?
- Separation of clean & dirty (only clean linen in room and no dirty linen)
- Is the clean linen covered when being transported?
Soiled Utility
Soiled Utility

- Are floors, counters and wall clean?
- Separation of clean & dirty (no clean equipment/supplies stored in room)
- Is soiled linen bagged at point of use in leak proof bags? (all linen should be in bags in the cart)
- Linen cart is not overfilled? (no bags on the floor by cart)
- No overfilled garbage or infectious waste containers?
- Is soiled linen transported in covered carts to the reprocessing area?
Nursing Station
Nursing Station

- Are the counters and floor clean and free from debris?
- No food and drink at the nursing station?
- Nourishment refrigerator is clean, temperature monitored daily, and is at <41°F
  - No staff food stored in nourishment refrigerator
- Are chair upholstery torn? Are they a cleanable surface? (not cloth)
Urinary Catheter Care & Maintenance

- Quiz staff on urinary catheter insertion and maintenance?
  - Urinary catheter inserted with aseptic technique and sterile equipment?
  - Only staff who have had competency-based training insert urinary catheters?
  - Urinary catheter is secured and foley bag kept below level of bladder and not on the floor?
  - Catheter is not routinely changed out at fixed intervals?
  - Closed drainage system maintained with no kinks in collection tube?
  - Urine samples collected aseptically? (from the port and not the bag)
  - Routine periurethral care with daily hygiene?
  - Gloves are worn when manipulating the catheter, tubing or collection bag?
  - Urine is emptied in a clean container dedicated for each resident?
  - Continued need is assessed regularly for continued need and documented?
Central Line Care

- Quiz staff on central line care, if applicable.
  - Only staff who have had competency training access and maintain central lines?
  - Central line insertion date and indications is documented?
  - Central line dressing is clean, dry and intact? What is policy for changing dressing?
  - Dressing is changed with clean (aseptic) technique with sterile gloves or clean gloves.
  - Access port is scrubbed with an appropriate antiseptic (CHG, povidone iodine or 70% alcohol) prior to accessing
  - Central line is accessed only with sterile devices?
  - Central line is regularly accessed for continued need and documented?
Respiratory Care

- **Quiz staff on respiratory therapy care?**
  - Hand hygiene performed before and after contact with a resident or any respiratory therapy equipment used on the resident
  - Gloves are worn when in contact with respiratory secretions, removed and hand hygiene done before contact with other residents or the environment
  - Only sterile solutions (water or saline) is used in the nebulizer?
  - Single-dose vials for aerosolized medications are not used for more than one resident?
  - If multi-dose vials for aerosolized medications are used, manufacturer’s IFU for handling, storing and dispensing the medications are followed.
  - If multi-dose vials for aerosolized medications are used for more than one resident, they are stored appropriately and do not enter the immediate resident treatment area.
  - Jet nebulizer are for single resident use and are cleaned and stored as per facility policy, rinsed with sterile water, and air-dried between treatments on the same resident.
  - The head of the bed is elevated at 30-45° angle in the absence of medical contraindications, for residents at high risk for aspiration (e.g., resident with an enteral tube in place)
Medication Room/Cart
Medication Management

- Competency validation training on injection safety on hire and annually
- Controlled substances are monitored and tracked
- Injections are prepared in clean (aseptic) technique in a clean area that has been cleaned
- Needles and syringes are one time use on one resident
- Insulin pens are used for only one resident
- Rubber septum of vial is disinfected with alcohol prior to piercing
- Medication vials are entered with a new needle
- Medications labeled for single dose use is used only once for one resident and is discarded after use
- Bags of IV solutions are used for only one resident and not as a source of flush solution for multiple residents.
Medication Management

- Medication vials are dated when first opened and discarded in 28 days unless the manufacturer specifies a different (shorter or longer) date for that opened vial.
- Multi-dose vials used for more than one resident are stored appropriately and do not enter the immediate resident care area (e.g., procedure rooms, resident rooms).
- Medication refrigerator is clean, temperature monitored daily, recorded, and is at the correct temperature range (35-46°F).
  - Only medications stored
- Pills are crushed in a peel pack, so crusher is not contaminated.
- Check for expired medications.
Point of Care Testing (POCT)

Observe staff or quiz staff on performing POCT (e.g., blood glucose check)

- Staff who perform POCT have had competency-based training on hire and annually?
- Supplies necessary for adherence to safe POCT (e.g., single-use, auto-disabling lancets, sharps containers) should be readily available in resident care areas
- Hand hygiene should be performed before and after POCT
- Gloves should be worn when performing fingerstick, are removed following procedure, and hand hygiene done
- Fingerstick devices are single use only (includes the lancet and lancet holding device)
- POCT testing device (e.g., blood glucose monitor) should be cleaned/disinfected before and after each use according to manufacturer’s instructions
Sharps Containers

- Sharps are disposed of in puncture-resistant sharps containers
- Sharps containers are not full (above the fill line)?
- Sharps containers are disposed of appropriately as medical waste
- Medication cart should have a sharps container
Wound Care
Wound Care

- **Quiz staff at Wound Care Cart or Observe practice**
  - Hand hygiene is performed before a wound procedure
  - Gloves are worn during the wound procedure
  - Face protection (e.g., goggles and facemask) is worn during care that may generate splashes or aerosols such as with irrigation, pulse lavage or vacuum-assisted closure devices
  - Gown is worn if anticipation of contamination (e.g., large or excessive draining wound)
  - Reusable dressing care equipment (e.g., bandage scissors) are cleaned and reprocessed (i.e., disinfected or sterilized according to manufacturers instructions) if shared between residents
  - Clean wound dressings supplies are handled in a way to prevent cross contamination between residents (e.g., wound care cart remains outside of resident care areas; unused supplies are not returned to cart but either are discarded or remain dedicated to resident)
  - Multi-dose wound medications (e.g., ointments, creams) should be dedicated to one resident whenever possible and stored in dedicated containers with the resident’s label). If used for more than one resident, medication should be stored in a central medication area and should not enter the resident treatment area. A small amount can be placed in, for example, a medication cup and taken to the resident care area.
  - Gloves are removed after the procedure and hand hygiene done
Shower Room
Shower Room

- Floors and walls are clean and free of debris
- Room is free from obstruction and equipment is clean and dry
- Shower chairs and scales disinfected after each use
- Shower curtain is clean and free of mold and dirt
- Staff can describe procedure for cleaning and disinfection after each use, including shower and hand-held device
- Soap and shampoo containers are not “topped off” or refilled
- Disinfectant products must be properly stored (in cabinet)
Resident Room
Resident Room

- Check an empty resident room for set up, cleanliness, soap, water and paper towels available.
  - Does facility have a policy in place who is responsible for cleaning/disinfection of items in the resident room, how often and what with?
- Check an isolation at outside of door only
  - Sign on door with required PPE clearly shown
  - Correct isolation type for infectious process
  - Hand hygiene done prior to entering and donning PPE
  - Correct donning/doffing procedure observed or described
  - PPE readily available on cart/caddy at door
  - Dedicated vital sign equipment
  - PPE is properly discarded, and hand hygiene done before leaving the resident room
Rehabilitation/Gym
Rehab/Gym

- Floor, walls and bathroom are clean
- Hand hygiene sink present with soap, water and paper towels
- Hand sanitizer accessible
- Exercise equipment clean and free of tape and tears
- Counters are free of clutter
- PPE is readily available in the area
- Cubicle curtains are clean and free of tears
  - Policy in place for cleaning curtains
  - Discuss colonization of bacteria on curtains and studies done, for example:
- No food and drink in the resident care areas
- Disinfectant wipes readily available for staff to disinfect equipment after each use
Laundry Processing Area

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Laundry Processing Area

- The receiving area for soiled linen should be separated from the clean laundry area.
- Clean linen are packaged, transported and stored in a manner to ensure cleanliness and protected from contaminates, (e.g., covered, wrapped).
- Facility should use the manufacturer’s recommended laundry cycles, water temperatures and chemical/detergent products.
- A hand washing station and PPE should be available in areas where non-bagged soiled linen is handled.
- No food or drink in the processing areas.
- Linen management policy should include cleaning and disinfection of the linen carts or for cart exchange off premises.
Summary

- We were able to walk you through assessing a facility for a clean and sanitary environment and many other infection prevention and control practices, such as hand hygiene, PPE use, injection safety, and wound care.

- We encourage facilities to perform routine surveillance to assess the infection prevention and control practice, identify gaps, and take action as needed.

- Developing a customized checklist for your facility will help facilitate this process.

- Results of audits should be reported back to the staff and your committees as appropriate.
Resources

- https://www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm
- https://www.health.state.mn.us/people/cyc/cycphceng.pdf
- https://www.cdc.gov/injectionsafety/
- https://www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/EnvironmentalCleaning.aspx
- https://www.cdc.gov/hai/prevent/resource-limited/laundry.html
- APIC Text. Chapter 27, 28 & 29
- CDC Hand Hygiene Guidelines
Resources

- WHO Hand Hygiene Guidelines
- https://www.cdc.gov/infectioncontrol/basics/standard-precautions.html
- https://www.cdc.gov/infectioncontrol/basics/transmission-based-precautions.html