Public Health
Seattle & King County

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 Presentatic

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 Nurs

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.)

Public Health
Seattle & King County

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
  - Review Washington State Department of Health and Social Services for reports on inspections and investigations of the facility
    - https://fortress.wa.gov/dshs/adsaapps/lookup/NHPubLookup.aspx
  - Review Medicare Nursing Home Compare website for stats on the facility
    - 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 that 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_Asessment_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

https://www.cdc.gov/coronavirus/2019-ncov/hcp/assessment-tool-for-nursing-homes.html

Infection Prevention and Control Assessment & Response (ICAR)

Background Knowledge

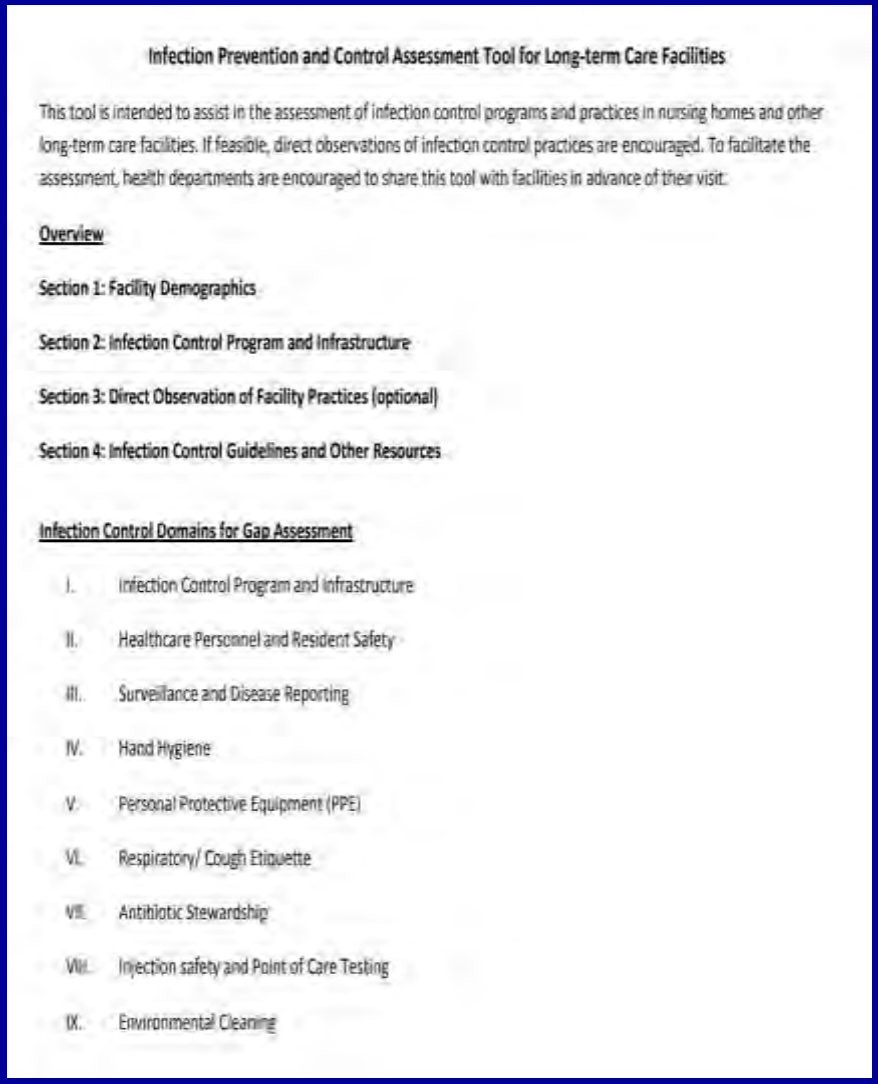
What is an ICAR?

- 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.

https://www.cdc.gov/hai/prevent/infection-control-assessment-tools.html

Types of ICAR Tools

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



Infection Prevention and Control Assessment Tool for Long-term Care Facilities

This tool is intended to assist in the assessment of infection control programs and practices in nursing homes and other long-term care facilities. If feasible, direct observations of infection control practices are encouraged. To facilitate the assessment, health departments are encouraged to share this tool with facilities in advance of their visit.

Overview

Section 1: Facility Demographics

Section 2: Infection Control Program and Infrastructure

Section 3: Direct Observation of Facility Practices (optional)

Section 4: Infection Control Guidelines and Other Resources

Infection Control Domains for Gap Assessment

I. Infection Control Program and Infrastructure

II. Healthcare Personnel and Resident Safety

III. Surveillance and Disease Reporting

IV. Hand Hygiene

V. Personal Protective Equipment (PPE)

VI. Respiratory/ Cough Etiquette

VII. Antibiotic Stewardship

VIII. Injection safety and Point of Care Testing

IX. Environmental Cleaning

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

The Infection Preventionist

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

Section B	Infection Preventionist
B.1.	The facility has designated one or more individuals with initial and maintain ongoing specialized training ininfection prevention and control as the Infection Preventionist (IP). This individual works at least part-timein the facility. ***Examples of specialized training may include: Participationin infection control courses organized by thestateor recognized professional societies (e.g., APIC, SHEA, state/local healthdepartment, CDC).*** A free onlineand on-demand infection preventionandcontrol training titled"NursingHome Infection Preventionist Training Course" is availableon CDC's TRAIN website (https://www.train.org/cdctrain/training_plan/3814).

https://www.cms.gov/files/document/qso-20-03-nh.pdf

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

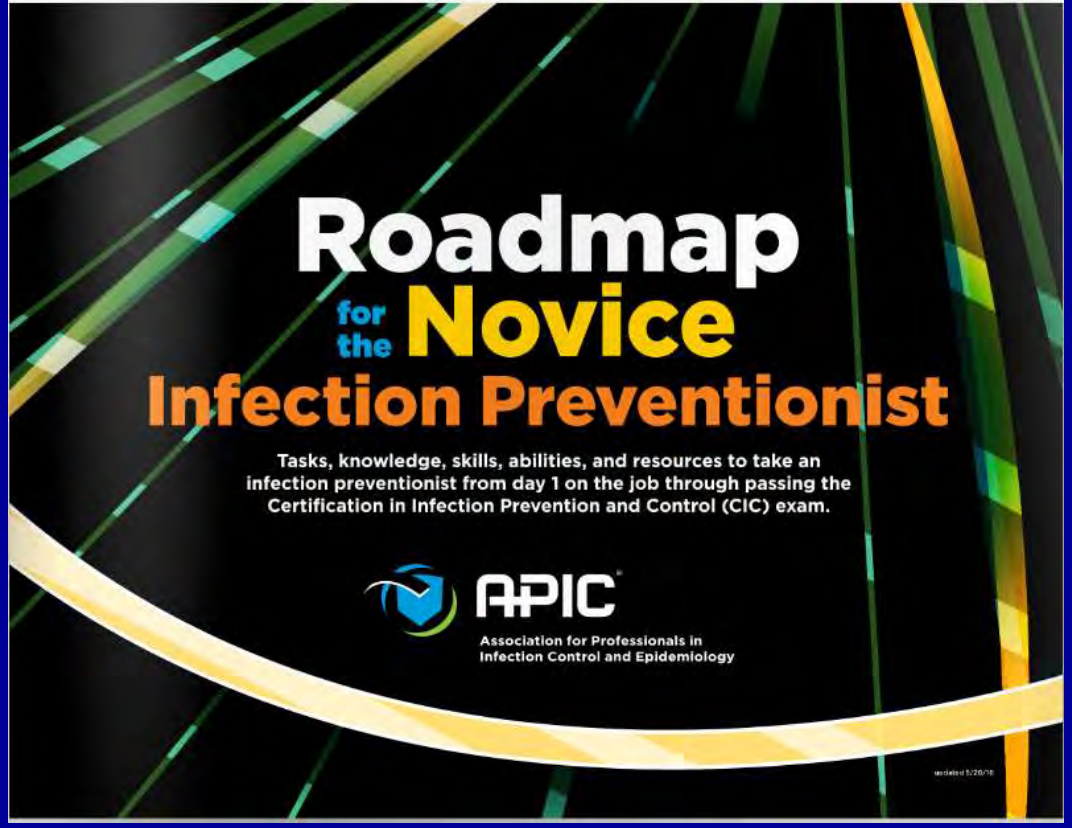
https://www.cbic.org/CBIC/2020CandidateHandbook.pdf

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/



- **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/

Certification Board of Infection Prevention and Control (CBIC)

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

CIC® Exam References

Primary References

- *APIC Text of Infection Control and Epidemiology*, 4th ed., *Volume I, Volume II* and *Volume III*, APIC, Washington, DC, 2014.
- Kulich P, Taylor D, eds. *The Infection Preventionist's Guide to the Lab*, APIC, Washington, DC, 2012.
- Heymann, D., ed. *Control of Communicable Diseases Manual,* 20th ed., Washington, DC: American Public Health Association; 2015.
- Brooks, Kathy. *Ready Reference for Microbes*, 4th ed., APIC; 2018.

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.
- Pickering, Larry K, ed. Red Book, 30th ed., Elk Grove Village, IL: American Academy of Pediatrics; 2015.

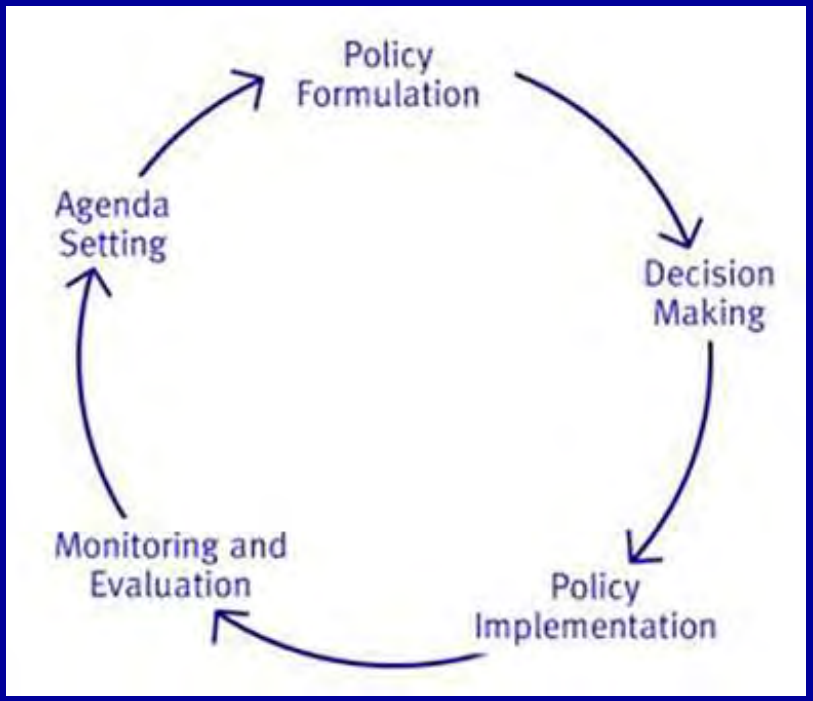
Infection Prevention & Control Policies

- Excerpt from CMS infection Control Worksheet for Nursing Homes

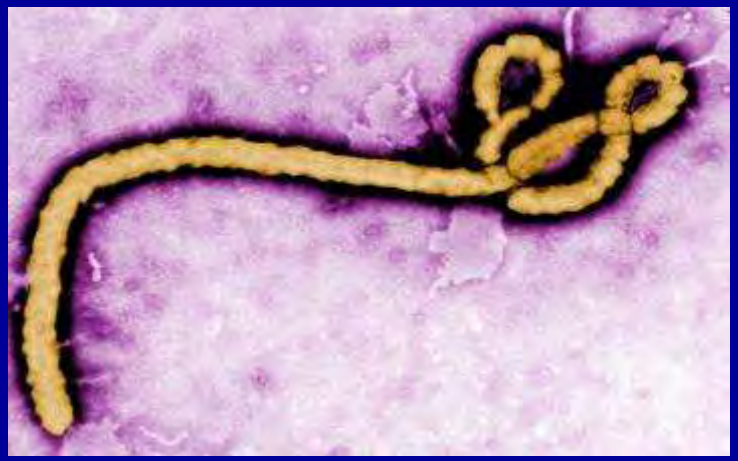
Section A	Infection Preventionand Control Program (IPCP) Infrastructure
A.1.	The facility has written infection preventionand control policies and procedures which arebased on current nationallyrecognized evidence-based guidelines (e.g., CDC/HICPAC), regulations or standards for its Infection Prevention and Control Program(IPCP).
A.2.	The facility has evidenceof mandatory personnel infection prevention and control training which includes the IPCP written standards, policies, and procedures.

Infection Prevention & Control Policies

- Review/Revise Annually
- Routinely monitor/evaluate
- Practice = Policy



Emergency Preparedness Plan



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
- APIC Text. Chapter 1 & 2
- http://www.cbic.org
- 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

Employee Health Policy:
Work Exclusion Policy

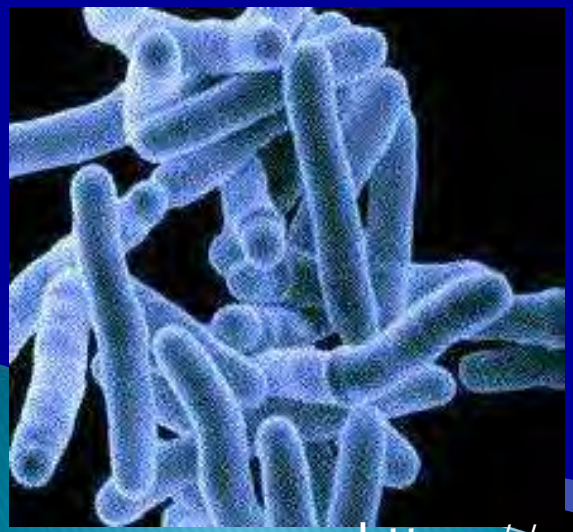
Table 3. Summary of suggested work restrictions for health care personnel exposed to or infected with infectious diseases of importance in health care settings, in the absence of state and local regulations (modified from ACIP recommendations[9])

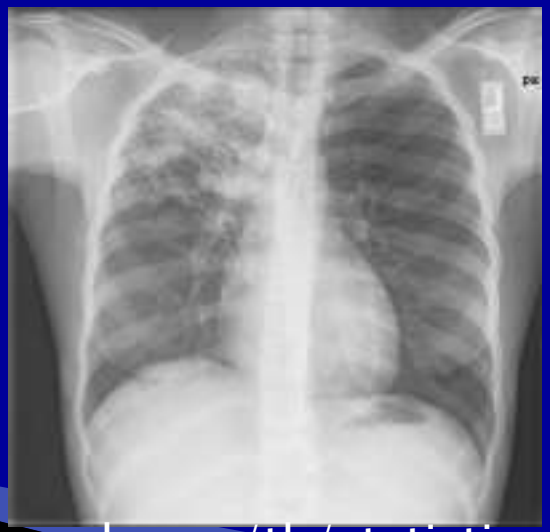
Disease/problem	Work restriction	Duration	Category
Conjunctivitis	Restrict from patient contact and contact with the patient's environment	Until discharge ceases	II
Cytomegalovirus infections	No restriction		II
Diarrheal diseases			
Acute stage (diarrhea with other symptoms)	Restrict from patient contact,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

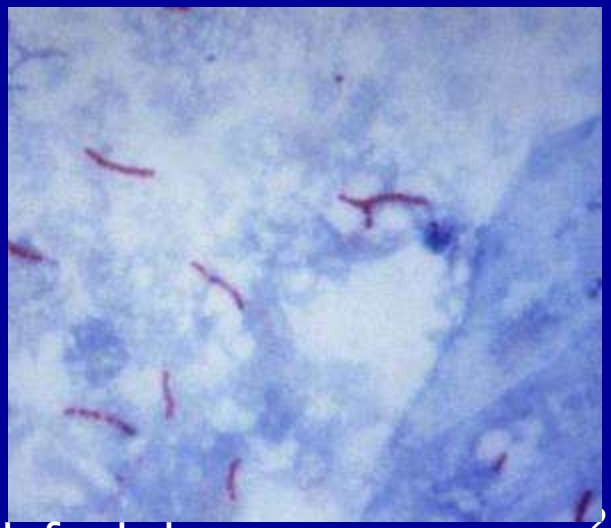
https://www.cdc.gov/hicpac/pdf/InfectControl98.pdf

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







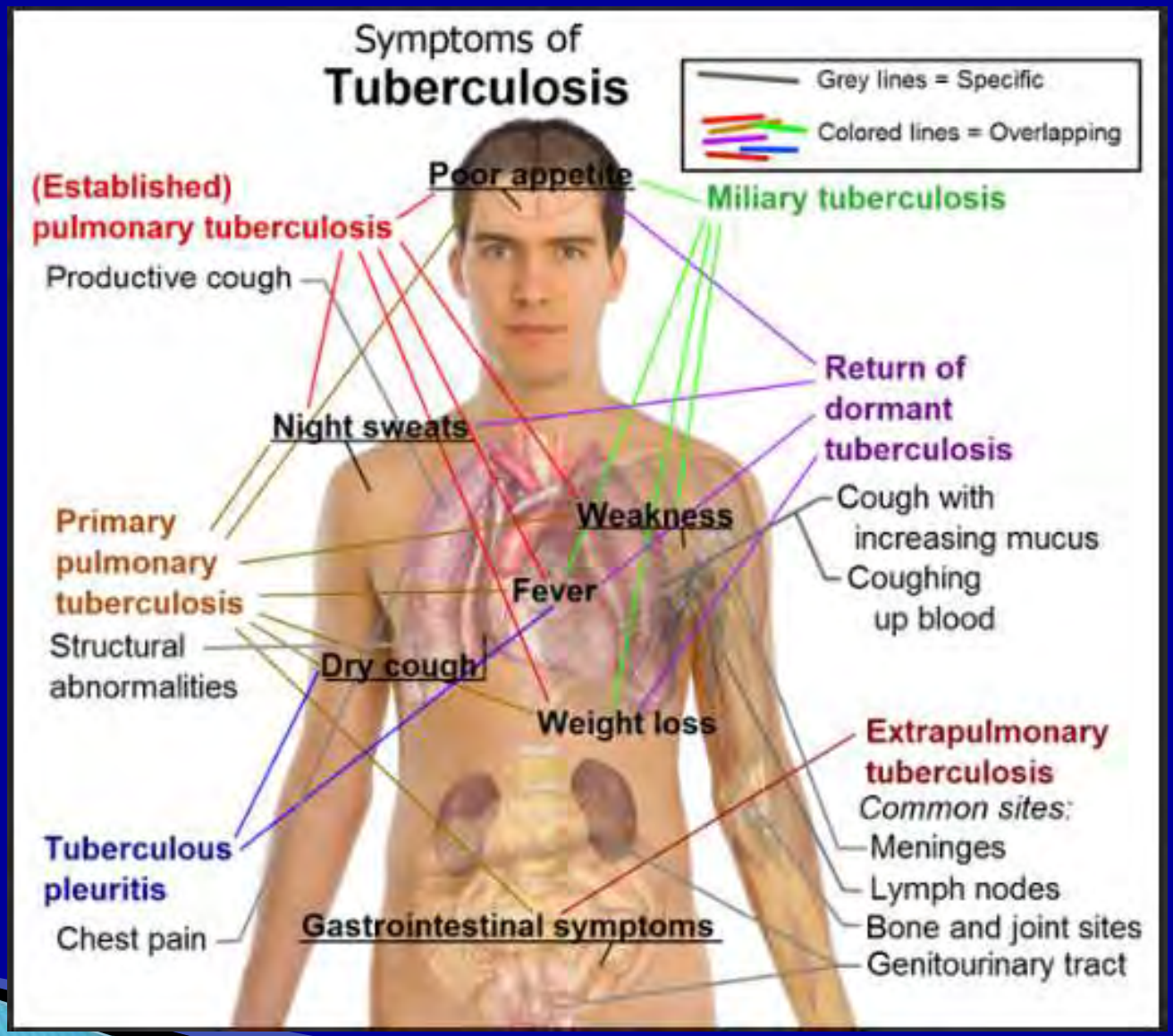
https://www.cdc.gov/tb/statistics/default.htm

Tuberculosis (TB)

- 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



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

Testing and Diagnosis

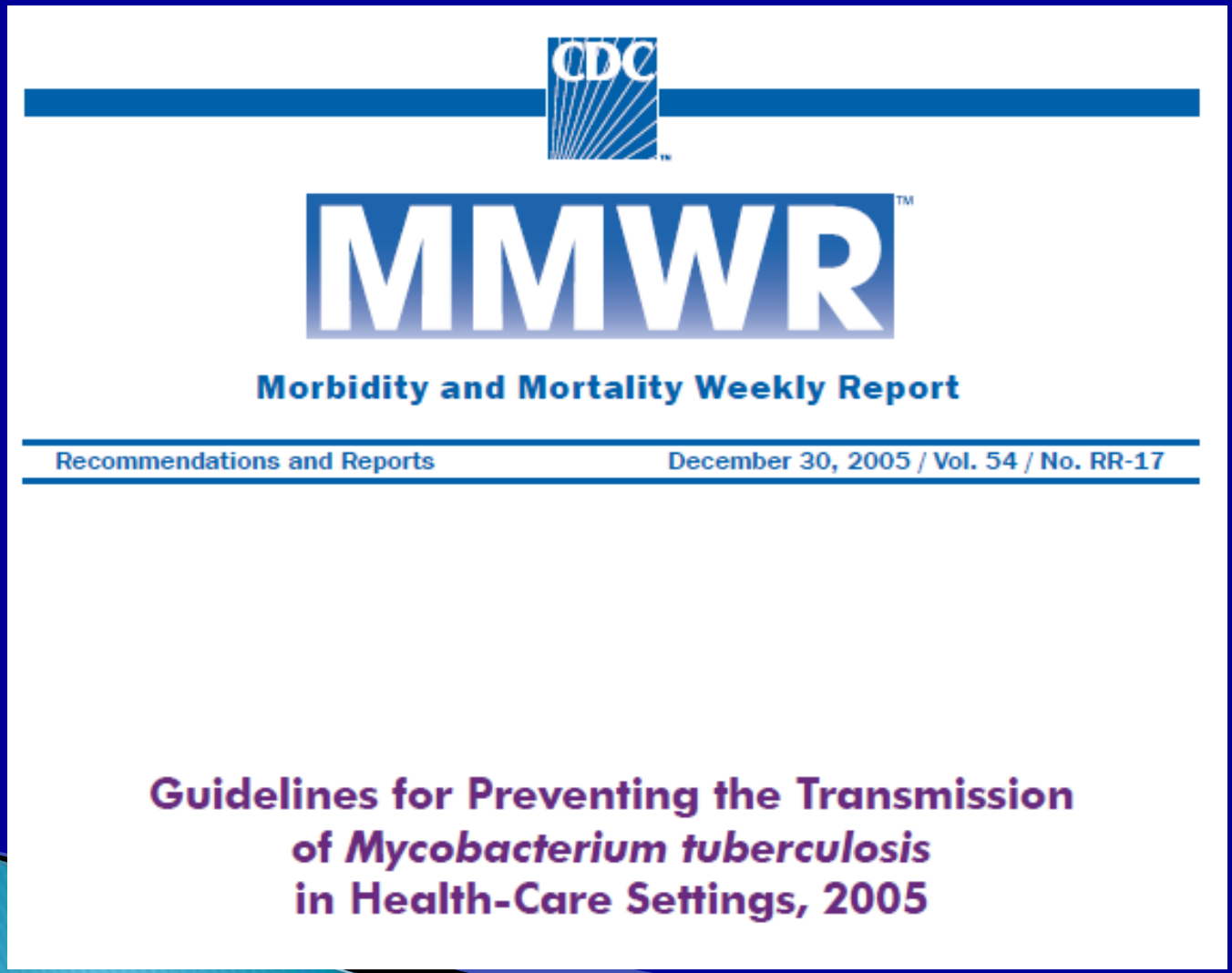
- Clinical Symptoms for TB
- Mantoux skin tests (TST) requires initial test, read in 48-72 hours
  - Or Interferon Gamma Release Assay (IGRA)
  - BCG-Vaccinated Persons may receive TST
- If positive TB test:
  - CXR
  - Sputum for AFB and culture

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)

CDC MTB Prevention Guidelines



CDC

MMWR

Morbidity and Mortality Weekly Report

Recommendations and Reports — December 30, 2005 / Vol. 54 / No. RR-17

Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Settings, 2005

TB Screening, Testing, and Treatment of U.S. HCP: Recommendations from the National Tuberculosis Controllers Association and CDC, 2019

TABLE. Comparison of 2005* and 2019† recommendations for tuberculosis (TB) screening and testing of U.S. health care personnel (HCP)

Return

Category	2005 Recommendation	2019 Recommendation
Baseline (preplacement) screening and testing	TB screening of all HCP, including a symptom evaluation and test (IGRA or TST) for those without documented prior TB disease or LTBI.	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)**.
Postexposure screening and testing	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.	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)**.
Serial screening and testing for HCP without LTBI	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.	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)**.
Evaluation and treatment of positive test results	Referral to determine whether LTBI treatment is indicated.	Treatment is encouraged for all HCP with untreated LTBI, unless medically contraindicated **(new)**.

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

* Jensen PA, Lambert LA, Iademarco MF, Ridzon R. Guidelines for preventing the transmission of *Mycobacterium tuberculosis* in health-care settings, 2005. MMWR Recomm Rep 2005;54(No. RR-17). https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm.

† 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.

https://www.cdc.gov/mmwr/volumes/68/wr/mm6819a3.htm?s_cid=mm6819a3_w

TB & Respiratory Protection Program

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

Tuberculin Skin Test (TST)

- 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/HBV*faq.htm#overview

Nonhospital Transmission of HCA *HBV & HCV* 2008–2018

- 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

Nonhospital HCA *HBV &HCV* Transmission: US 2008–2018

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

HBsAg **anti-HBc** **anti-HBs**	negative negative negative	Susceptible
HBsAg **anti-HBc** **anti-HBs**	negative positive positive	Immune due to natural infection
HBsAg **anti-HBc** **anti-HBs**	negative negative positive	Immune due to hepatitis B vaccination
HBsAg **anti-HBc** **IgM anti-HBc** **anti-HBs**	positive positive positive negative	Acutely infected
HBsAg **anti-HBc** **IgM anti-HBc** **anti-HBs**	positive positive negative negative	Chronically infected
HBsAg **anti-HBc** **anti-HBs**	negative positive negative	Interpretation unclear; four possibilities: 1. Resolved infection (most common) 2. False-positive anti-HBc, thus susceptible 3. "Low level" chronic infection 4. Resolving acute infection

https://www.cdc.gov/hepatitis/HBV/PDFs/SerologicChartv8.pdf

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 2. Postexposure management of health-care personnel after occupational percutaneous and mucosal exposure to blood and body fluids, by health-care personnel HepB vaccination and response status

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

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

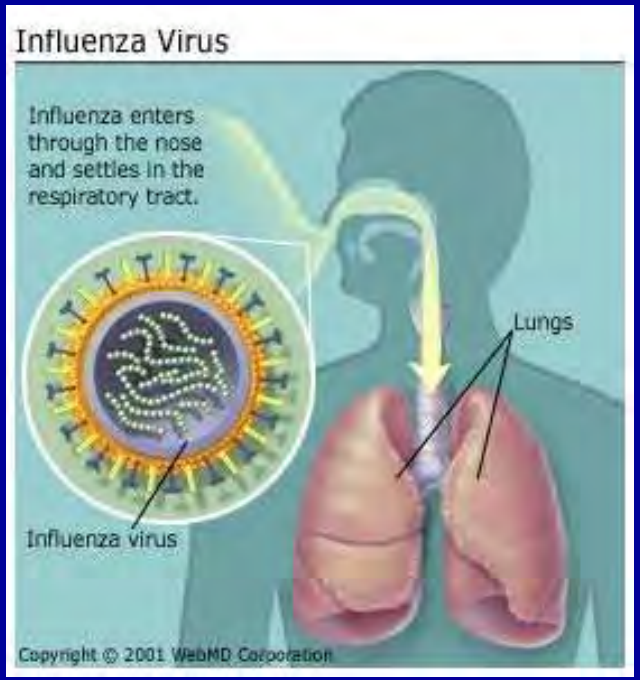
OSHA Requirements

- Bloodborne Pathogen Standard (29 CFR Part 1910.1030) – Effective March 1992
  - 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.
- Hazard Communication (29 CFR 1910.1200)
- Occupational Injury and Illness Recording and Reporting (29 CFR 1904)

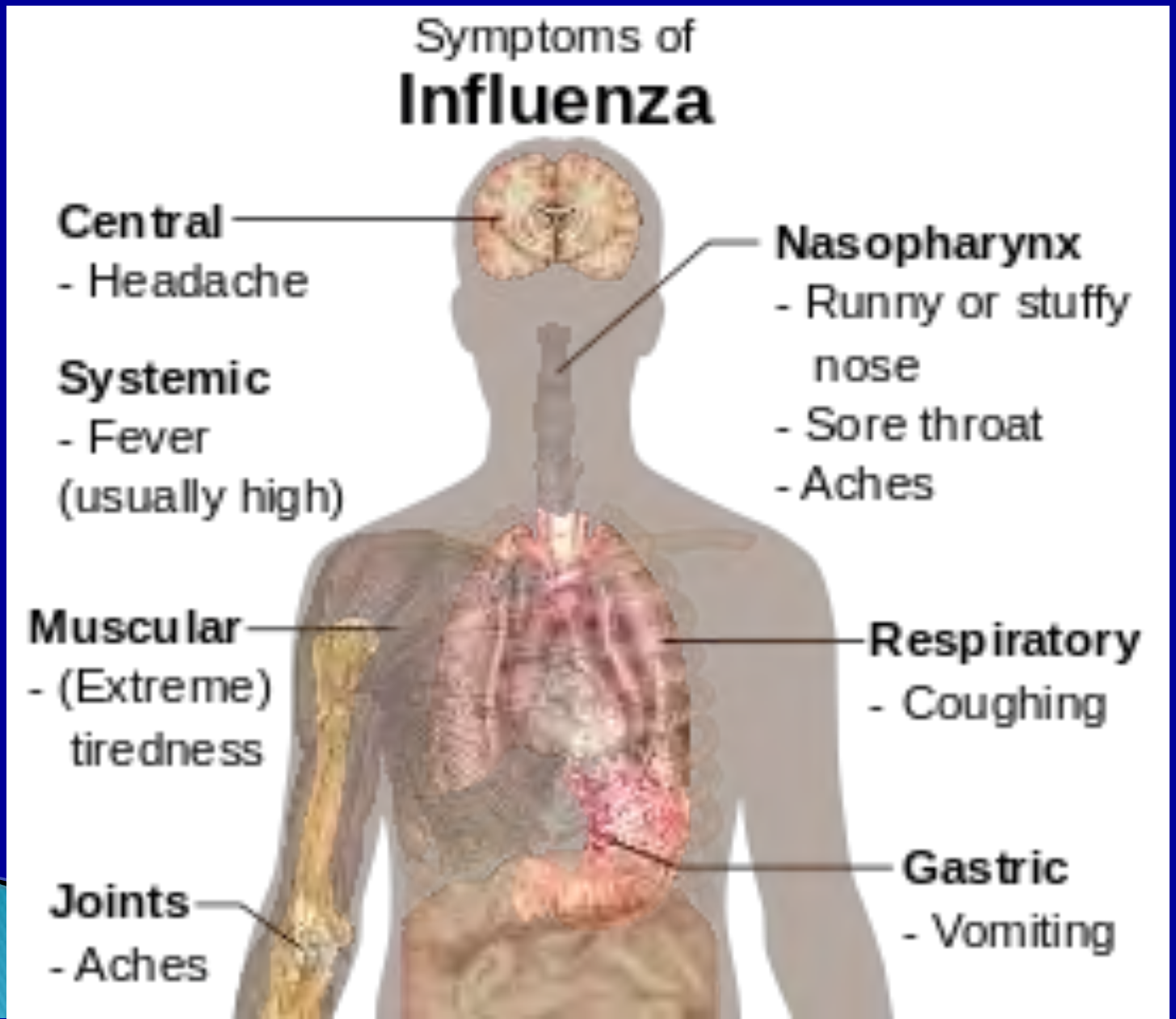
Model ECP: https://www.osha.gov/sites/default/files/publications/osha3186.pdf

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



Influenza

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

Monitoring & Evaluation of HCW illness

- 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

Resident Safety

- 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

Summary

- 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

- Guideline for Infection Control in Healthcare Personnel: http://www.cdc.gov/hicpac/pdf/InfectControl98.pdf
- Immunization of HealthCare Personnel: http://www.cdc.gov/vaccines/adults/rec-vac/hcw.html
- CDC Influenza Vaccination Tool-kit for Long-term Care Employers: http://www.cdc.gov/flu/toolkit/long-term-care/index.htm
- Occupational Safety & Health Administration (OSHA) Bloodborne Pathogen and Needlestick Prevention Standard: https://www.osha.gov/SLTC/bloodbornepathogens/index.html
- CMS Infection Control worksheet for LTC: https://www.cms.gov/files/document/qso-20-03-nh.pdf

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.

https://qsep.cms.gov/data/252/A._NursingHome_InfectionControl_Worksheet11-8-19508.pdf

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

Recommended Practice for Surveillance

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

Recommended Practices for Surveillance

III. Use surveillance definitions

- Use written definitions to ensure accuracy of applying case definitions
  - E.g.. NHSN surveillance definitions

https://www.cdc.gov/nhsn/pdfs/ltc/ltcf-manual-508.pdf

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

Recommended Practices for Surveillance

V. Calculate and analyze infection rates

VI. Apply risk stratification methodology

Calculating Rates/Ratios by Denominator Type

Total population at risk (examples):

- $\frac{\text{5 SSIs}}{\text{150 colon surgeries}} \times 100 = 3.33$

- $\frac{\text{4 CAUTIs}}{\text{2500 urinary catheter days}} \times 1000 = 1.6$

Total number of events possible (example):

$\frac{\text{45 hand hygiene (HH) observations}}{\text{55 opportunities for HH}} = 0.82 \text{ or } 82\%$

$\frac{\text{30 CLIPS w/100\% compliance}}{\text{35 central line insertions}} = 0.86 \text{ or } 86\%$

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

Recommended Practices for Surveillance

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

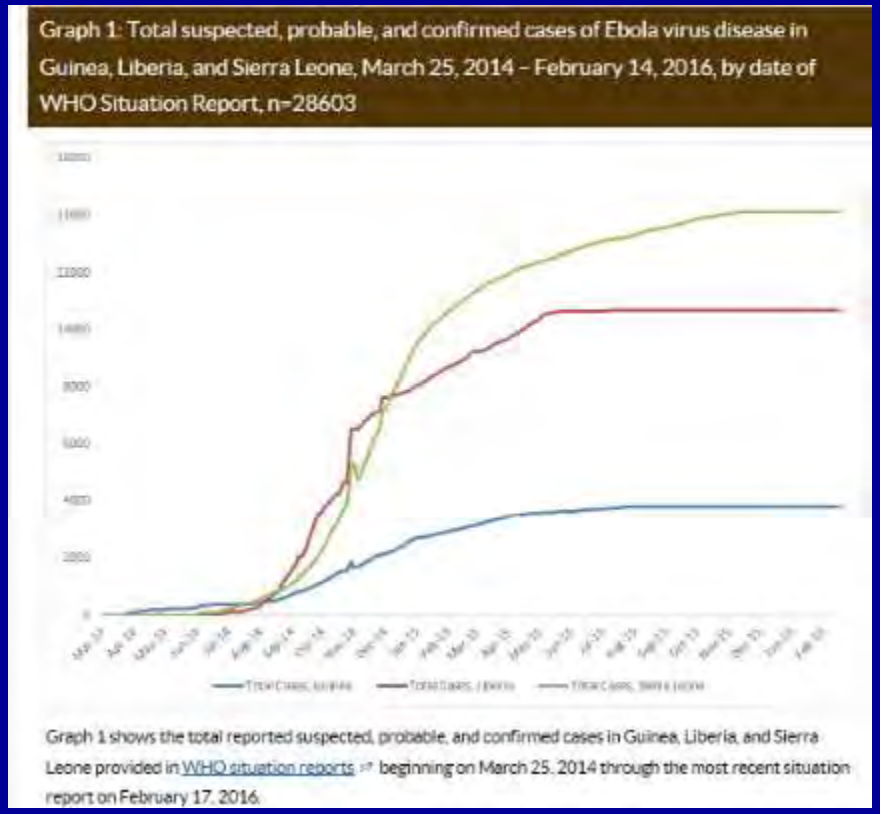
Outbreak Response Plan

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

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 of 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
  - National Library of Medicine http://www.nlm.nih.gov/
  - CDC- http://www.cdc.gov/
  - 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

					Diagnostic							Lab		
					Signs and Symptoms									
Case#	Initials	Date of Report	Date of Onset	Physician Diagnosis	N	V	A	F	DU	J	HAIgM	Other	Age	Sex
1	JG	10/12	12/6	Hep A	+	+	+	+	+	+	+	SGOT ↓	37	M
2	BC	10/12	10/5	Hep A	+	-	+	+	+	+	+	Alt ↓	62	F
3	HP	10/13	10/4	Hep A	±	-	+	+	+	S*	+	SGOT ↓	30	F
4	MC	10/15	10/4	Hep A	-	-	+	+	?	-	+	Hbs/ Ag-	17	F
5	NG	10/15	10/9	NA	-	-	+	-	+	+	NA	NA	32	F
6	RD	10/15	10/8	Hep A	+	+	+	+	+	+	+		38	M
7	KR	10/16	10/13	Hep A	±	-	+	+	+	+	+	SGOT = 240	43	M

S*=Sclera;, N=Nausea; V=Vomiting; A=Anorexia; F=Fever; DU=Dark urine; J=Jaundice; HAIgm=Hepatitis AIgM antibody test

Epidemic Curve

- 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.

Epidemic Curve

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

Public Health
Seattle & King County

https://www.kingcounty.gov/depts/health/communicable-diseases/health-care-providers/disease-reporting/notifiable-conditions.aspx

Summary

- 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

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- APIC Text. Chapter 11 & 12
- https://www.cdc.gov/foodsafety/outbreaks/surveillance-reporting/investigation-toolkit.html
- https://wwwnc.cdc.gov/eid/article/4/1/98-0104_article
- Heyman, David. Control of Communicable Diseases Manual. 2008; pages A10-A19.
- 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.

https://www.who.int/images/default-source/ihs/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

https://www.who.int/images/default-source/health-topics/screenshot-2020-03-24-at-07-27-20.png?sfvrsn=919e6ac0_7

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

Hand Soap Dispenser

- 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?

Competency-Based Definitions

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.

https://www.cdc.gov/hai/prevent/infection-control-assessment-tools.html

Competency-based Training

- 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

Hand Hygiene Competency Validation

Soap & Water

Alcohol Based Hand Rub (ABHR) (60% - 95% alcohol content)

Type of validation: Return demonstration	☐ Orientation ☐ Annual ☐ Other

Employee Name: _____ Job Title: _____

Hand Hygiene with Soap & Water	Competent	
	YES	NO
1. Checks that sink areas are supplied with soap and paper towels		
2. Turns on faucet and regulates water temperature		
3. Wets hands and applies enough soap to cover all surfaces of hands		
4. Vigorously rubs hands for at least ***20 seconds*** including palms, back of hands, between fingers, and wrists		
5. Rinses thoroughly keeping fingertips pointed down		
6. Dries hands and wrists thoroughly with paper towels		
7. Discards paper towel in wastebasket		
8. Uses paper towel to turn off faucet to prevent contamination to clean hands		
Hand Hygiene with ABHR		
9. Applies enough product to adequately cover all surfaces of hands		
10. Rubs hands including palms, back of hands, between fingers until all surfaces dry		
General Observations		
11. Direct care providers—no artificial nails or enhancements		
12. Natural nails are clean, well groomed, and tips less than ¼ inch long		
13. Skin is intact without open wounds or rashes		

Comments or follow up actions:

_____ _____ / _____

Employee Signature Validator Signature Date

https://spice.unc.edu/wp-content/uploads/2020/04/Hand-Hygiene-Competency-SPICE_4-9-20.pdf

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

Hand Hygiene and Contact Precautions Observations				
Staff type*	**Type of opportunity**	**HH performed**	**Gown or glove indicated**	**Gown/glove used?**
	o Room Entry o Room Exit o Before Resident contact o After Resident Contact o After glove o Other	o Alcohol Rub o Soap and water o No Hand Hygiene	o Gown Only o Glove Only o Both o Not applicable	o Gown used o Glove used o Both o Not applicable
	o Room Entry o Room Exit o Before Resident contact o After Resident Contact o After glove o Other	o Alcohol Rub o Soap and water o No Hand Hygiene	o Gown Only o Glove Only o Both o Not applicable	o Gown used o Glove used o Both o Not applicable
	o Room Entry o Room Exit o Before Resident contact	o Alcohol Rub o Soap and water	o Gown Only o Glove Only o Both	o Gown used o Glove used o Both

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
- 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

Donning 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

Removing 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

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.

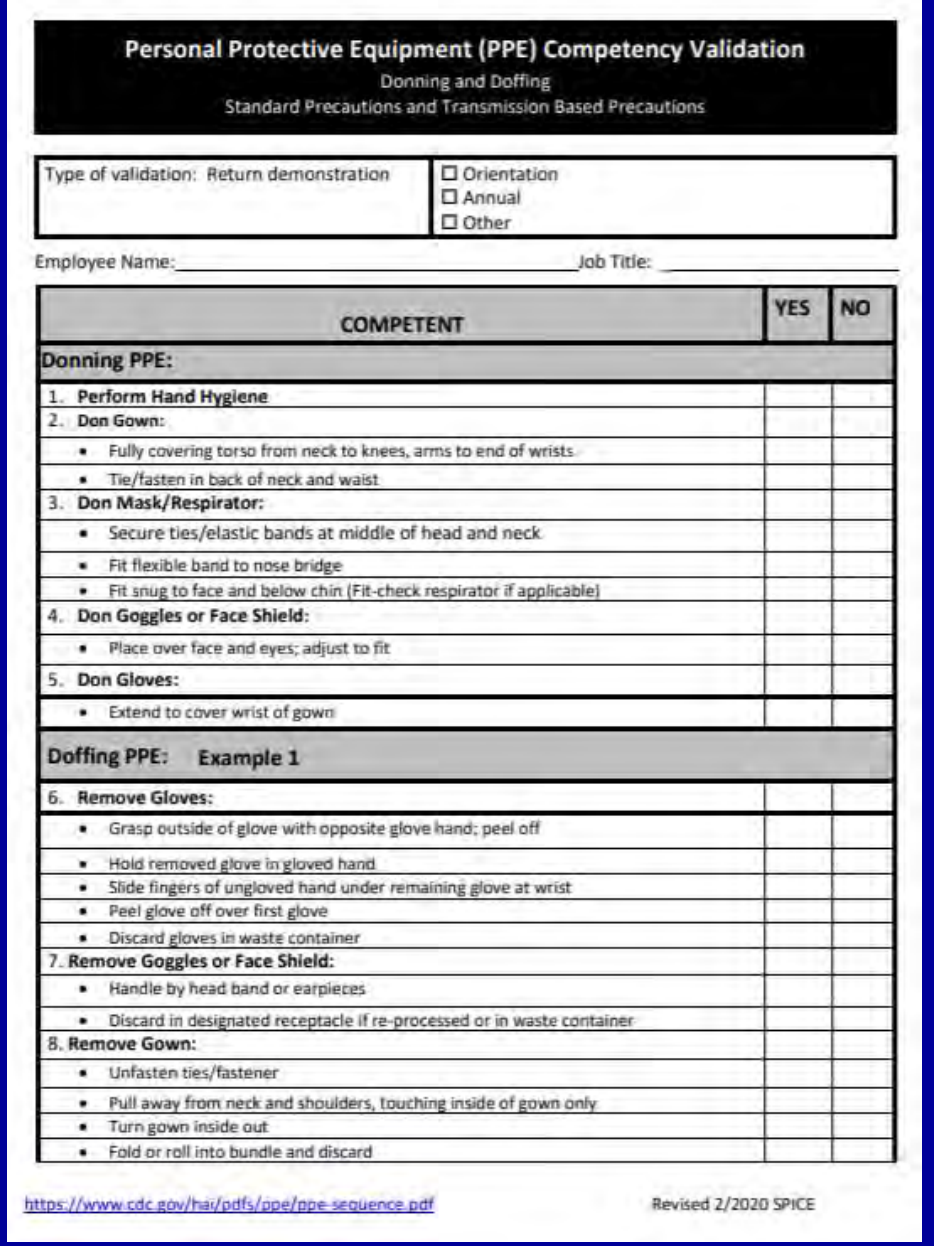
Airborne Precautions

- 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

PPE Competency, Audits & Feedback

- 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)



Personal Protective Equipment (PPE) Competency Validation
Donning and Doffing
Standard Precautions and Transmission Based Precautions

Type of validation: Return demonstration	☐ Orientation ☐ Annual ☐ Other

Employee Name:_____ Job Title: _____

COMPETENT	YES	NO
Donning PPE:		
1. **Perform Hand Hygiene**		
2. **Don Gown:**		
• Fully covering torso from neck to knees, arms to end of wrists		
• Tie/fasten 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 bundle and discard		

https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf Revised 2/2020 SPICE

https://spice.unc.edu/wp-content/uploads/2020/02/PPE-Competency-SPICErev-1-EC02272020.pdf

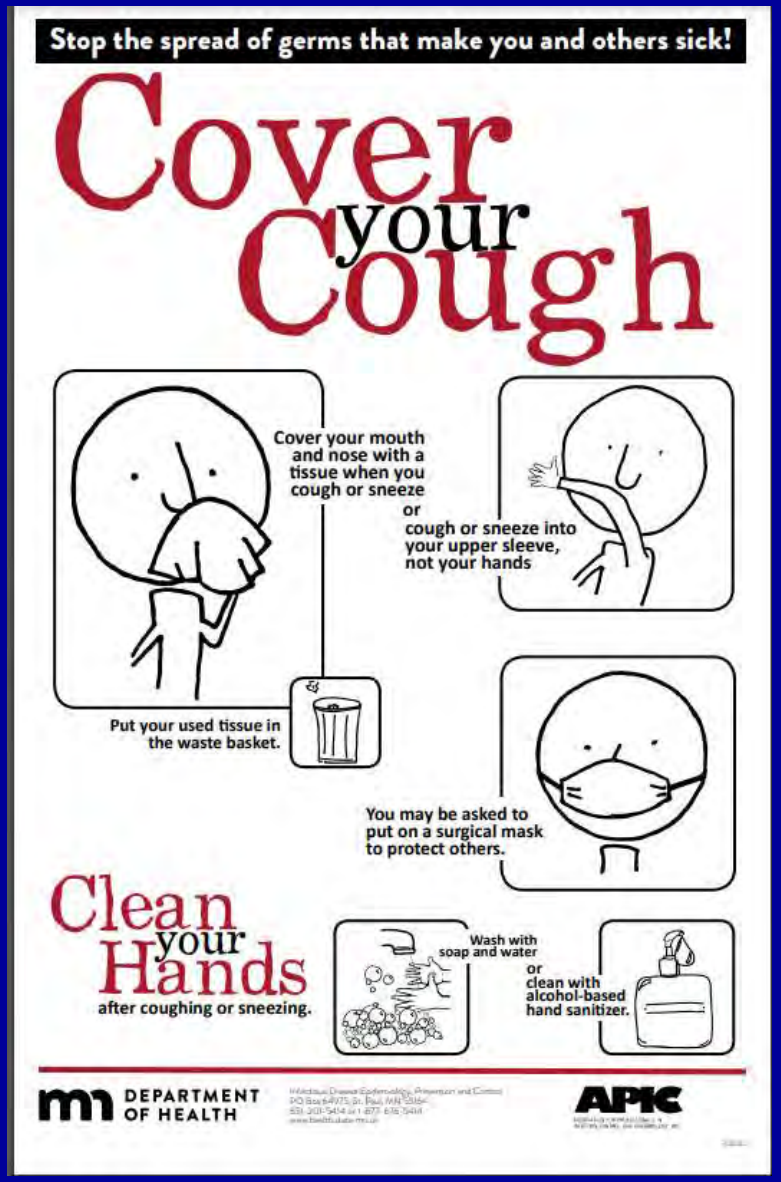
Respiratory Hygiene & Cough Etiquette

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/

Injection Safety

- 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 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

Type of validation: Return demonstration	☐ Orientation ☐ Annual ☐ Other

Employee Name: _____ Job Title: _____

Medication Preparation	Competent		N/A
	YES	NO	
1. Perform hand hygiene prior to preparing or administering medications			
2. Injections are prepared using aseptic technique in a clear area free from contamination or contact with blood, body fluids, or contaminated equipment			
3. Needles and syringes are used for only one patient (this includes manufactured prefilled syringes and cartridge devices)			
4. Rubber septum on medication vial is disinfected with alcohol prior to piercing			
5. Medication vials are entered with a new needle and new syringe, even when obtaining additional doses for same patient			
6. Single-dose or single-use medication vials, ampules, and bags/bottles of intravenous solution are used for only one patient			
7. Medication administration tubing and connectors are used for only one patient			
8. 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			
9. Multi-dose vials are dedicated to individual patients whenever possible (e.g., insulin vials, lidocaine, etc.)			
10. 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)			
11. Insulin pens dedicated to only one patient			
12. Medication is administered within 1 hour of preparation			

https://spice.unc.edu/wp-content/uploads/2017/03/Injection-Safety-Competency-SPICE.pdf

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/disinfected before and after each use according to manufacturer's instructions

Point of Care Testing Competency Validation

Point of Care Testing (e.g., glucometer, PT/INR)	Competent		N/A
	YES	NO	
13. Perform hand hygiene			
14. Don gloves			
15. Single-use, auto-disabling fingerstick device used for one patient only & discarded into sharps container			
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			
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)			
18. Gloves removed			
19. Hand hygiene performed			

https://spice.unc.edu/wp-content/uploads/2017/03/Injection-Safety-Competency-SPICE.pdf

Resources

- APIC Text. Chapter 27, 28 & 29
- https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf
- 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

Spaulding Classification

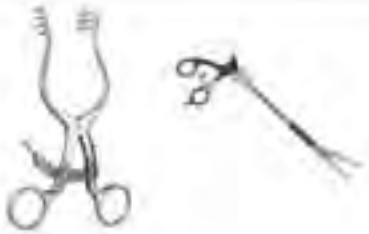
Established three levels of germicidal activity for reprocessing contaminated devices:

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

Patient Contact	Examples	Device Classification	Minimum Inactivation Level
Intact skin		Non-Critical	Cleaning and/or Low/Intermediate Level Disinfection
Mucous membranes or non-intact skin		Semi-Critical	High Level Disinfection
Sterile areas of the body, including blood contact		Critical	Sterilization

Critical Items

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

Rutala, 2004.

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

Classification	Semi-critical objects come in contact with mucous membranes or skin that is not intact.
Objective	Free of all microorganisms except high numbers of bacterial spores.
Level of Germicidal Action	Kills all microorganisms except high numbers of bacterial spores.
Examples	Respiratory therapy and anesthesia equipment, GI endoscopes, thermometer, etc.
Method	High-level disinfection

Rutala, 2004.

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

Manual Cleaning – Fluidics

- 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.

Mechanical Cleaning

- 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

Mechanical Cleaning – Washer-decontaminators/disinfectors

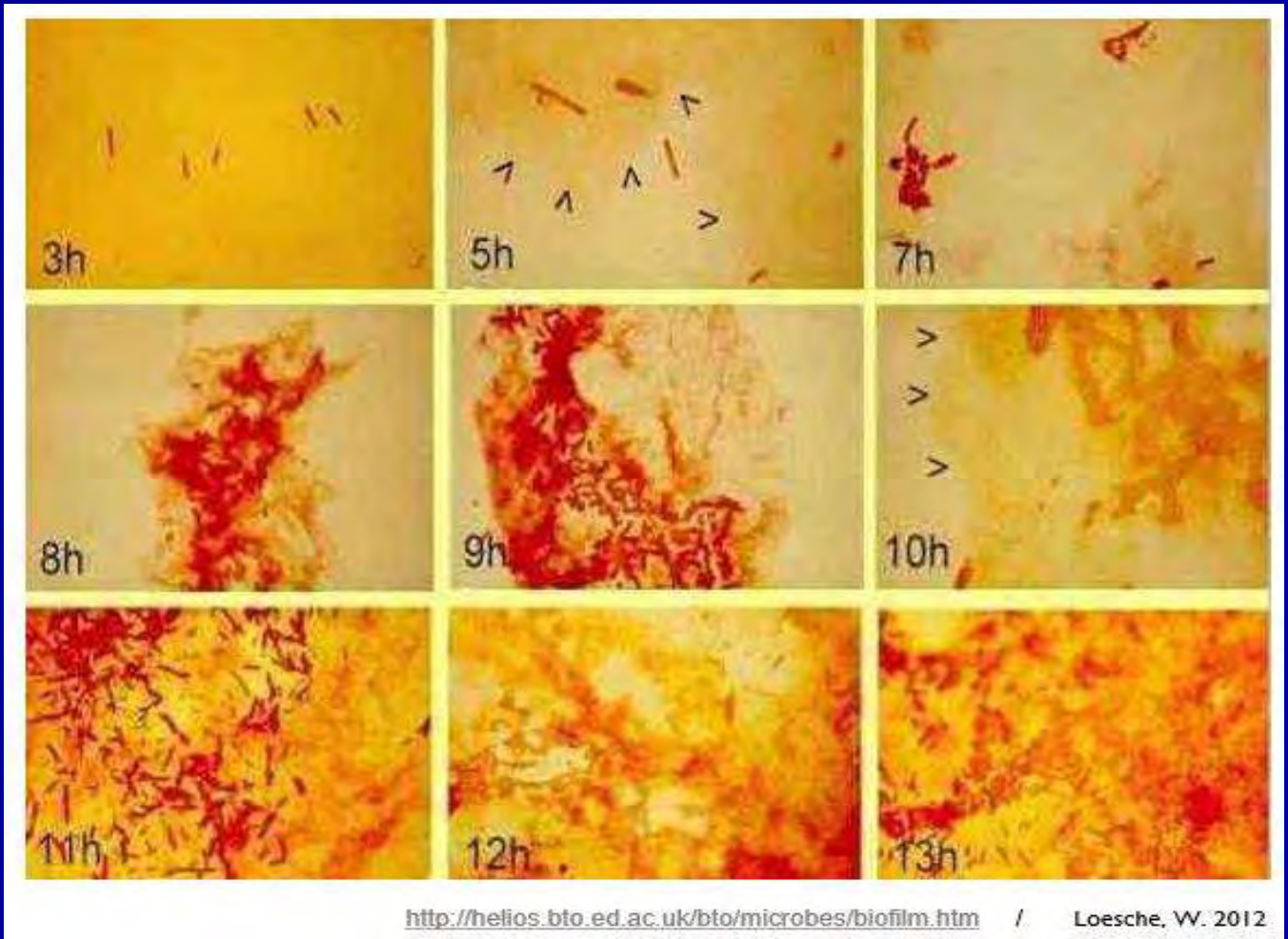
- Washer-decontaminators/disinfectors act like a dishwasher that uses a combination of water circulation and detergents to remove soil.

Rutala, 2016

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

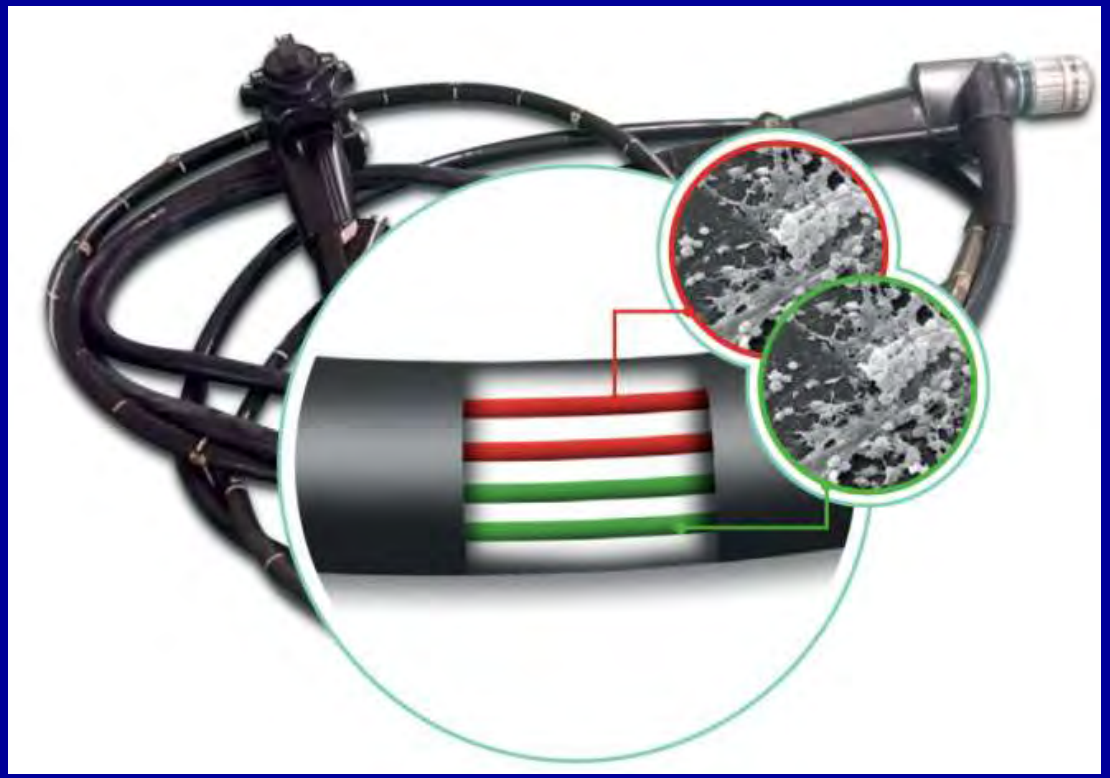
Biofilm Formation



http://helios.bto.ed.ac.uk/bto/microbes/biofilm.htm / Loesche, W. 2012

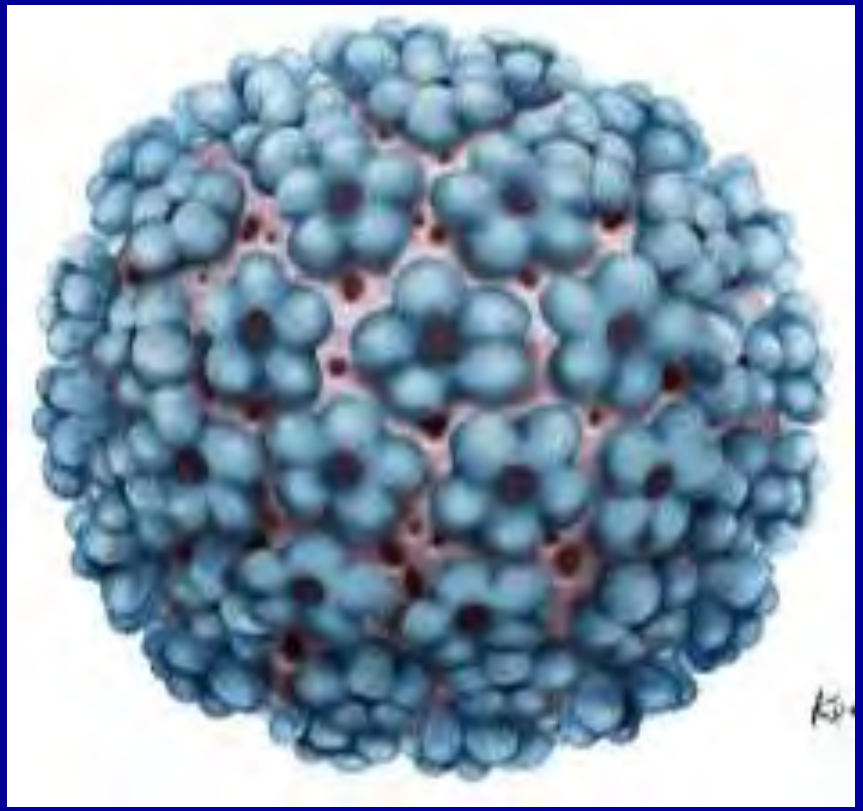
Stop Biofilms at Point of Use

- 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

Human Papilloma Virus

- 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

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

Rutala, 2004.

Role Of Surfaces In Disease Transmission

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

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

Kramer et al. (2006) BMC Infect Dis 2006;6:130e137.

https://apic.org/Resources/Topic-specific-infection-prevention/Environmental-services/

Room Cleaning and Disinfection

- 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

Contact Time For Disinfection Of Noncritical Surfaces And Patient Care Equipment

- 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

Contact Time For Disinfection Of Noncritical Surfaces And Patient Care Equipment

- 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

Hydrogen Peroxide

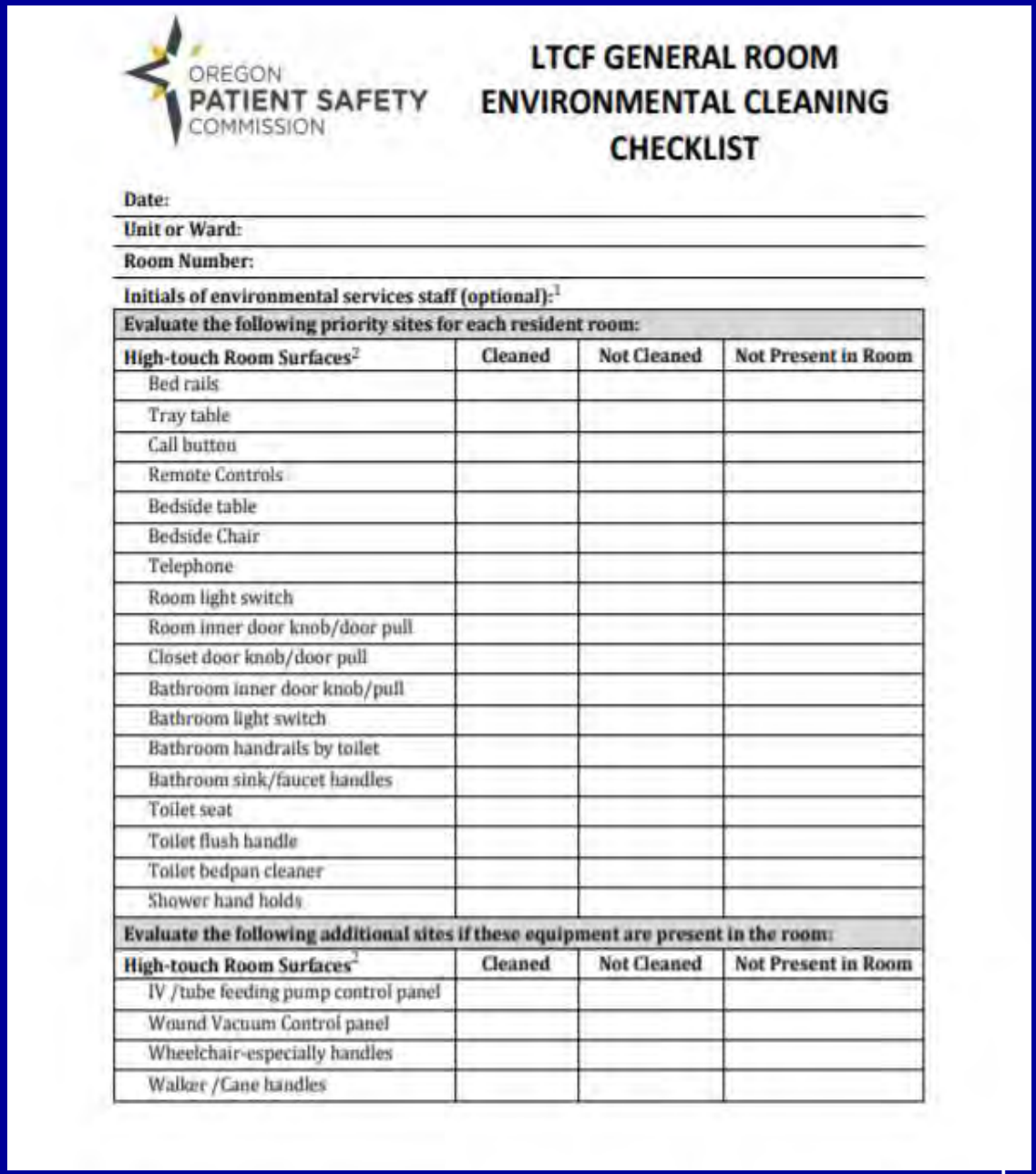
- Several systems that produce hydrogen peroxide (e.g., HP vapor, aerosolized dry mist HP) have been studied for their ability to decontaminate environmental surfaces and objects in hospital rooms.
- Hydrogen peroxide vapor (HPV) has been used increasingly for the decontamination of rooms in healthcare.
- 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



OREGON PATIENT SAFETY COMMISSION

LTCF GENERAL ROOM ENVIRONMENTAL CLEANING CHECKLIST

Date:

Unit or Ward:

Room Number:

Initials of environmental services staff (optional):[1]

Evaluate the following priority sites for each resident room:			
High-touch Room Surfaces[2]	**Cleaned**	**Not Cleaned**	**Not Present in Room**
Bed rails			
Tray table			
Call button			
Remote Controls			
Bedside table			
Bedside Chair			
Telephone			
Room light switch			
Room inner door knob/door pull			
Closet door knob/door pull			
Bathroom inner door knob/pull			
Bathroom light switch			
Bathroom handrails by toilet			
Bathroom sink/faucet handles			
Toilet seat			
Toilet flush handle			
Toilet bedpan cleaner			
Shower hand holds			
Evaluate the following additional sites if these equipment are present in the room:			
High-touch Room Surfaces[2]	**Cleaned**	**Not Cleaned**	**Not Present in Room**
IV /tube feeding pump control panel			
Wound Vacuum Control panel			
Wheelchair-especially handles			
Walker /Cane handles			

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

Assessment completed by:
Date:
Unit:

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.

	Environmental Cleaning Practices	EVS Staff 1	EVS Staff 2	EVS Staff 3	Adherence by Task	
					# Yes	# Observed
ES1.	Detergent/disinfectant solution is mixed and stored according to manufacturer's instructions.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No		
ES2.	Solution remains in wet contact with surfaces according to manufacturer's instructions.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No		
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.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No		
ES4.	Standard cleaning protocol is followed to avoid cross-contamination *(e.g. from top to bottom, patient room to bathroom, and clean to dirty)*	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No		
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.)*	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No		
ES6.	Hand hygiene is performed throughout the cleaning process as needed, including before and after glove use.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No		
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 <100%.*	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No		
ES8.	There are no visible tears or damage on environmental surfaces or equipment.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No		
ES9.	The room is clean, dust free, and uncluttered.	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No		

***Examples of high touch surfaces:**

Bed rail	Chair	Room light switch	TV remote	Bathroom door knob/handle	Bathroom sink
Tray table	In-room medical cart	IV pole ("grab area")	Room inner door knob/handle	Bathroom handrail	Bathroom faucet
Side table	Room sink	Call button	In-room cabinet	Bathroom light switch	Toilet flush handle
Side table handle	Room sink faucet	PPE container	In-room computer/keyboard	Toilet seat	Toilet/bedpan cleaner

# 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)

Version 2020.01.30

Monitoring Terminal Cleaning

CDC Environmental Checklist for Monitoring Terminal Cleaning[1]

Date:	
Unit:	
Room Number:	
Initials of ES staff (optional):[2]	

Evaluate the following priority sites for each patient room:

High-touch Room Surfaces[3]	**Cleaned**	**Not Cleaned**	**Not Present in Room**
Bed rails / controls			
Tray table			
IV pole (grab area)			
Call box / button			
Telephone			
Bedside table handle			
Chair			
Room sink			
Room light switch			
Room inner door knob			
Bathroom inner door knob / plate			

https://www.cdc.gov/hai/pdfs/toolkits/Environmental-Cleaning-Checklist-10-6-2010.pdf

"Who Cleans What??" checklist

ROLES AND RESPONSIBILITIES - WHO CLEANS AND DISINFECTS THESE DAILY?

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

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 handing soiled linen

References

- Rutala, W. A. (2004). Disinfection and Sterilization: Issues and Controversies.
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- Rutala, W. A., Weber, W. J. and the HICPAC. (2008). Guideline for Disinfection & Sterilization in Healthcare Facilities. Centers for Disease Control and Prevention.
- Van Ek, R. A. (2015). Disinfection and Sterilization in the Healthcare Environment.
- https://www.cdc.gov/hai/prevent/resource-limited/laundry.html
- https://qsep.cms.gov/data/252/A._NursingHome_InfectionControl_Worksheet11-8-19508.pdf
- https://www.cdc.gov/infectioncontrol/pdf/guidelines/environmental-guidelines-P.pdf

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

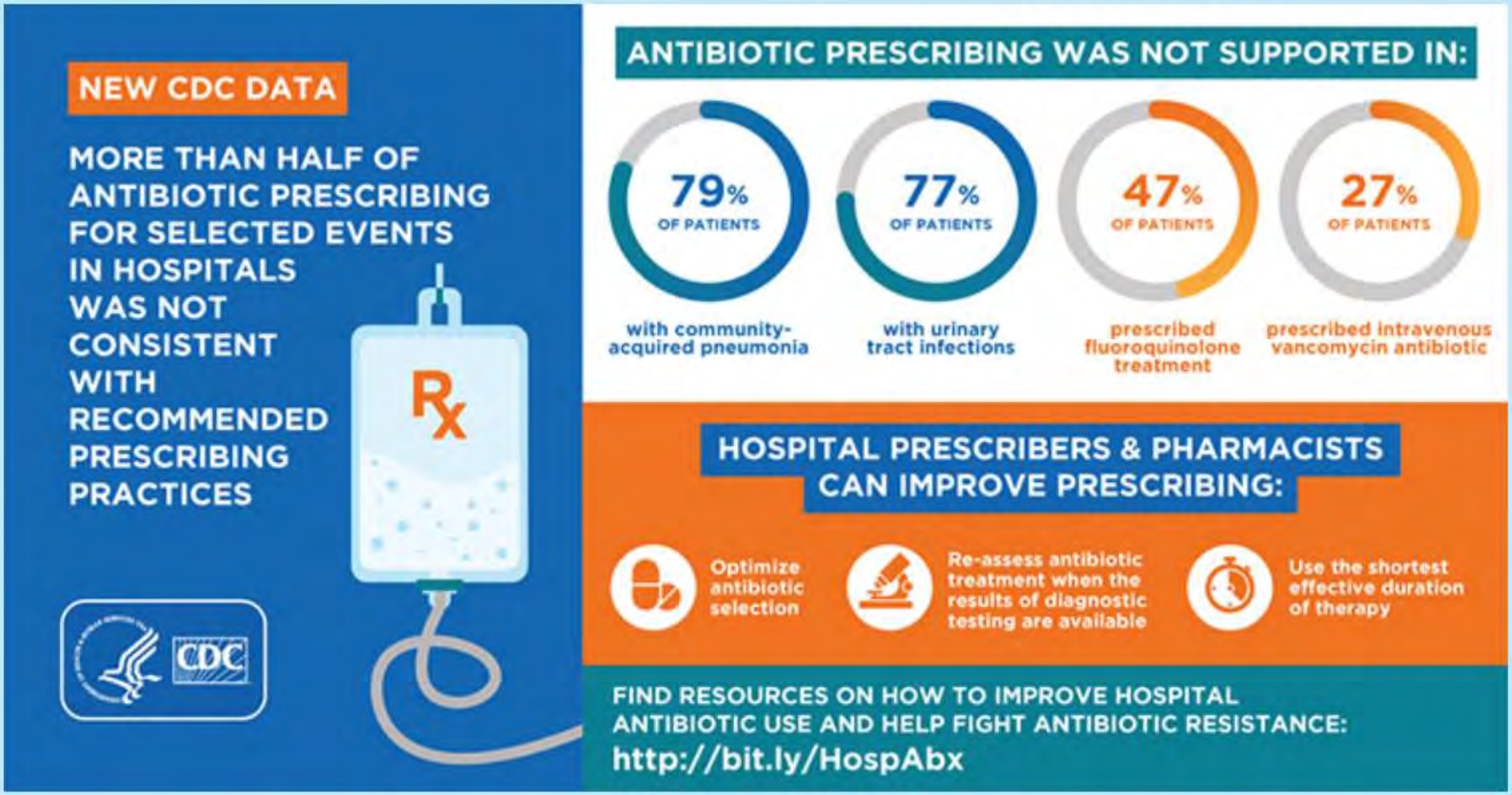
https://www.cdc.gov/longtermcare/pdfs/core-elements-antibiotic-stewardship.pdf

What is Antibiotic Stewardship?

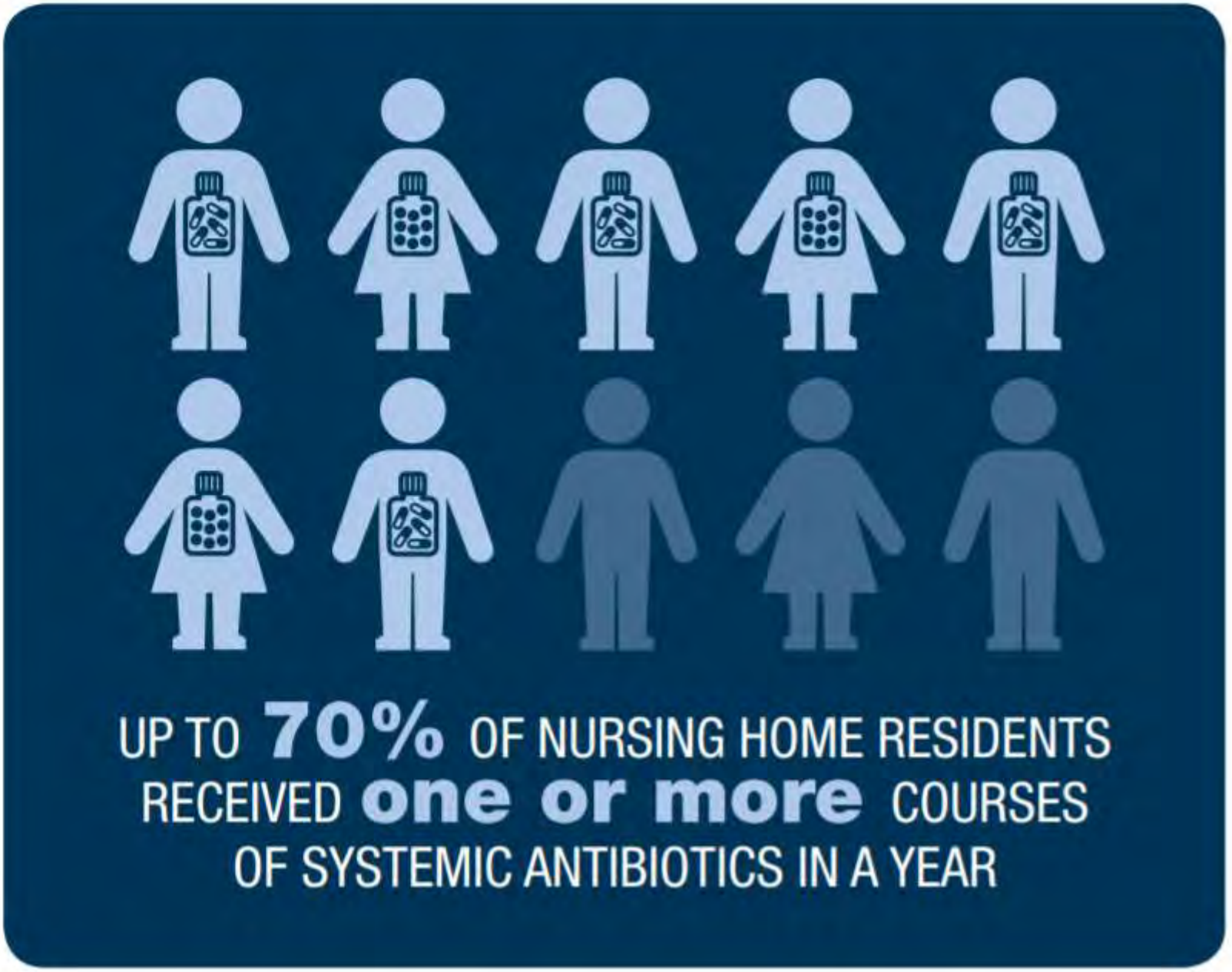
Antibiotic stewardship refers to a set of commitments and activities designed to "optimize the treatment of infections while reducing the adverse events associated with antibiotic use."

https://www.cdc.gov/longtermcare/pdfs/core-elements-antibiotic-stewardship.pdf

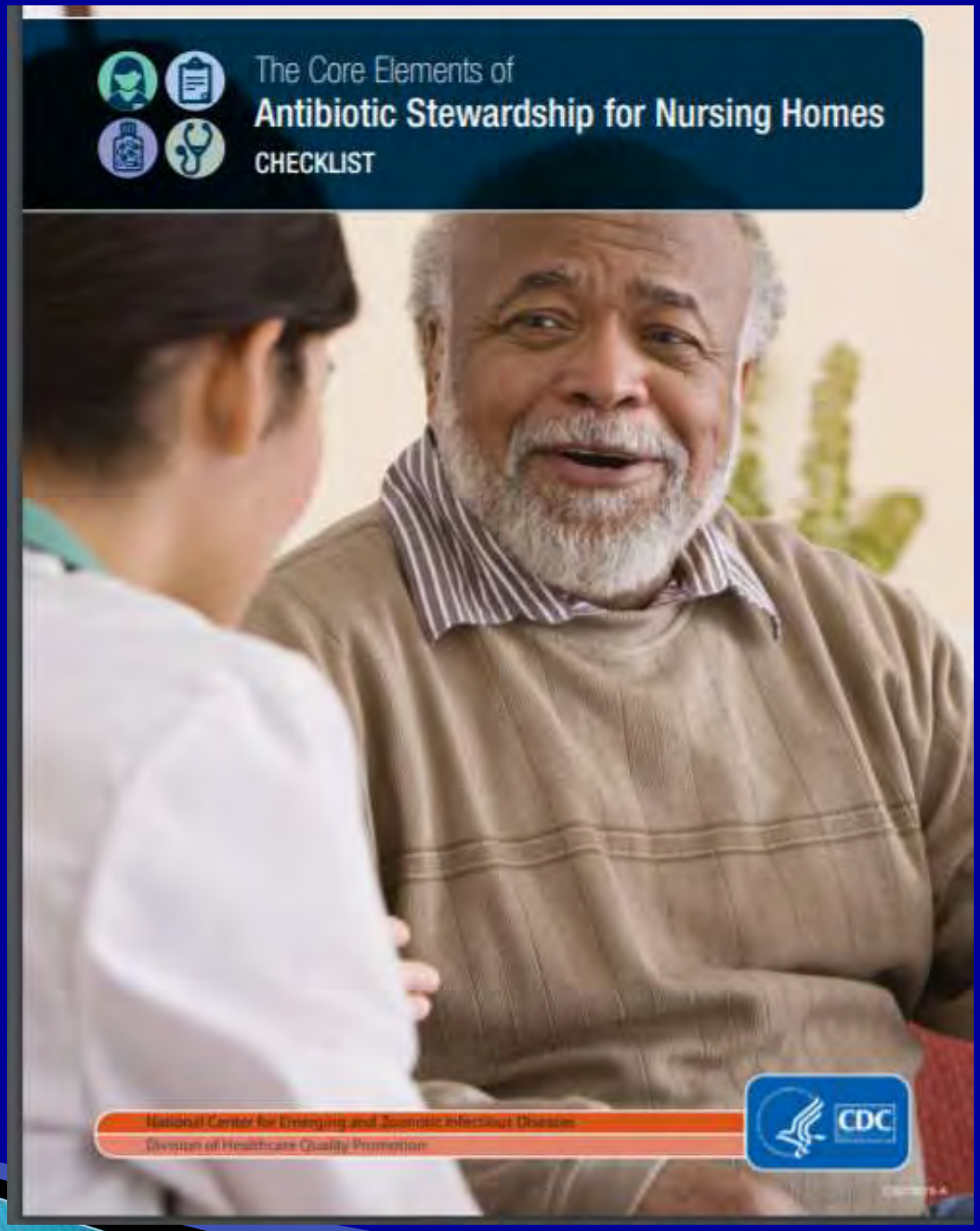
Why Do We Need Antibiotic Stewardship?



https://www.cdc.gov/antibiotic-use/core-elements/hospital.html



https://www.cdc.gov/longtermcare/pdfs/core-elements-antibiotic-stewardship.pdf



https://www.cdc.gov/longtermcare/pdfs/core-elements-antibiotic-stewardship-checklist.pdf

Summary of the Core Elements of Antibiotic Stewardship Program

Summary of the Core Elements of Antibiotic Stewardship Program (Cont.)

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
- https://qsep.cms.gov/data/252/A._NursingHome_InfectionControl_Worksheet11-8-19508.pdf
- https://www.cdc.gov/longtermcare/pdfs/core-elements-antibiotic-stewardship.pdf
- APIC Text, Chapter 33

Infection Control Assessment in Nursing Homes: Surveillance Rounds

This presentation will demonstration 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.

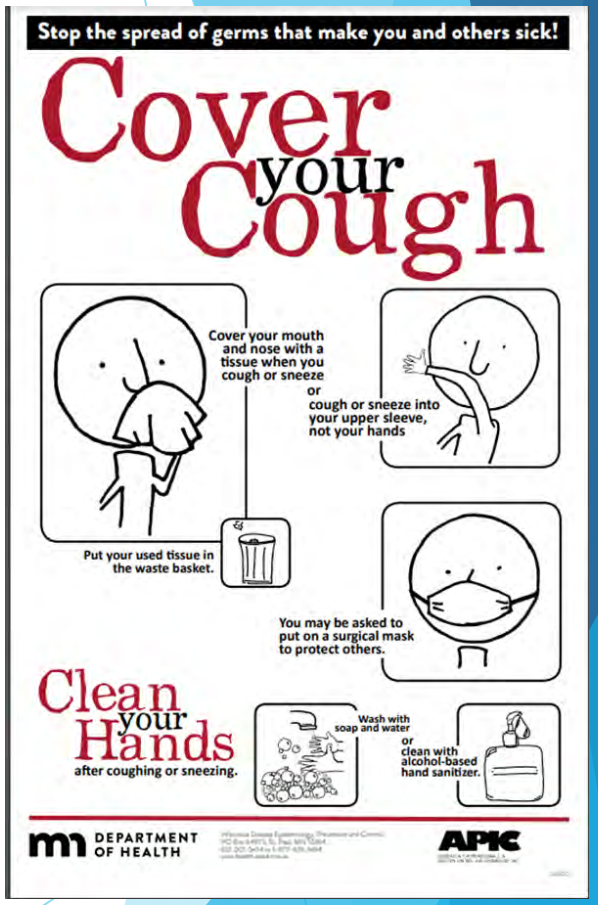
Areas we will visit

- 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

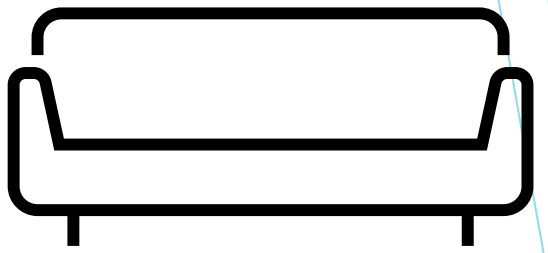
Lobby

- 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?

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

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
  - John Hopkins Hand Washing Video- Who Steps

https://www.who.int/images/default-source/health-topics/screenshot-2020-03-24-at-07-27-20.png?sfvrsn=919e6ac0_7

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 inched 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)

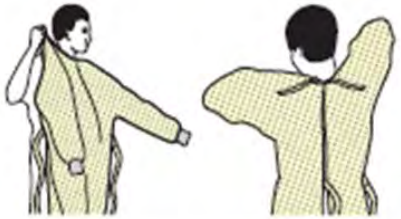
- PPE (gowns, gloves, masks, and protective eye wear) stored in each resident care area
- Have the appropriate staff had competency-based training on hire and annually?
- Are routine audits with feedback of the results to the staff being done?
- Observe PPE donning/doffing practice at the facility
  - 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 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

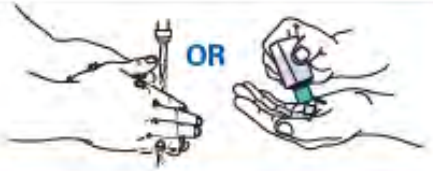
3. GOWN

- 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



Spaulding Classification

Patient Contact	Examples	Device Classification	Minimum Inactivation Level
Intact skin		Non-Critical	Cleaning and/or Low/Intermediate Level Disinfection
Mucous membranes or non-intact skin		Semi-Critical	High Level Disinfection
Sterile areas of the body, including blood contact		Critical	Sterilization

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

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 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 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 mediation 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

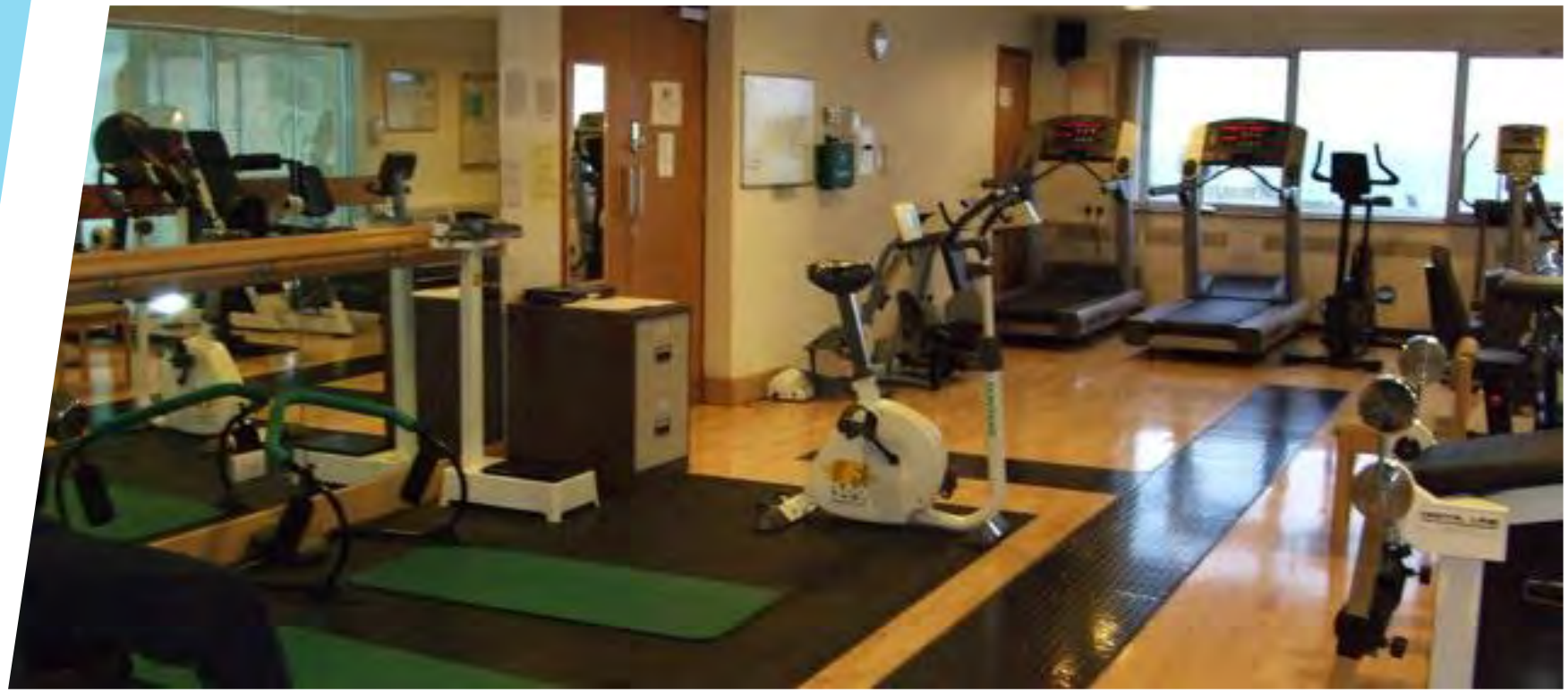
Shower Room

- 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:
    - Ohl et.al. Am J Infect Control. 2012 (read article via PubMed)
- No food and drink in the resident care areas
- Disinfectant wipes readily available for staff to disinfect equipment after each use

Laundry Processing Area

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/hicpac/pdf/guidelines/eic_in_HCF_03.pdf
- https://www.cms.gov/files/document/qso-20-03-nh.pdf
- https://www.cdc.gov/hai/prevent/infection-control-assessment-tools.
- 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
- https://www.cdc.gov/infectioncontrol/pdf/guidelines/environmental-guidelines-P.pdf

Resources

- WHO Hand Hygiene Guidelines
- https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf
- https://www.cdc.gov/infectioncontrol/basics/standard-precautions.html
- https://www.cdc.gov/infectioncontrol/basics/transmission-based-precautions.html
- Rutala, W. A., Weber, W. J. and the HICPAC. (2008). Guideline for Disinfection & Sterilization in Healthcare Facilities. Centers for Disease Control and Prevention.
- Van Ek, R. A. (2015). Disinfection and Sterilization in the Healthcare Environment.
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