Infection Prevention Roles and Services Within a Healthcare System and Beyond.

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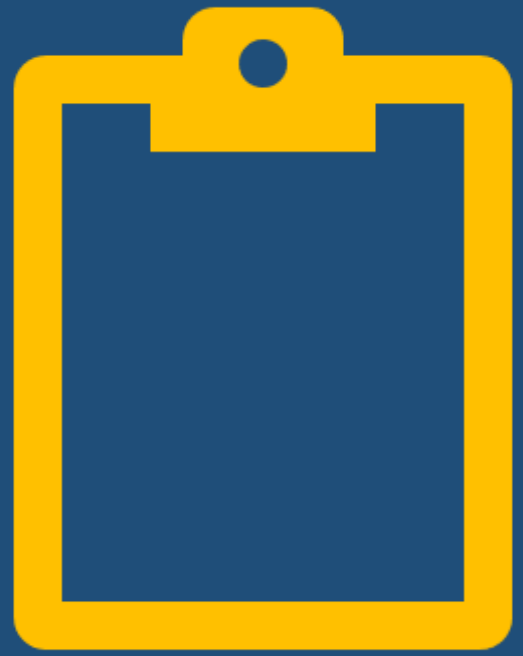
Objectives

1. Describe the various ways a healthcare professional can become an Infection Prevention practitioner.
2. List the various functions that can be performed by an Infection Preventionist.
3. Explain how roles of an Infection Preventionist may vary depending on their area of practice.
4. List ways Infection Preventionists can assist laboratories.



What is an Infection Preventionist and Why Do We Need Them?

- The Association for Professionals in Infection Control and Epidemiology (APIC) defines Infection Preventionist (IPs) as professionals who make sure healthcare workers and health facilities are doing all the things they should to prevent infections from spreading.
- Annually, approximately 2 million hospitalized patients will receive one or more healthcare acquired infections after receiving care.
- The U.S. Centers for Disease Control and Prevention estimates that on any given day, 1 in 31 hospital patients and 1 in 43 nursing home residents has an infection while being treated in a medical facility. Healthcare-associated infections claim the lives of tens of thousands of Americans each year and have devastating effects on physical, emotional, and financial health.

Risks for Healthcare Workers

- According to OSHA data HCW suffer more work related injuries than any other industry sector.
  - In 2020 the healthcare industry reported a 40% increase work-related injuries and illness (806,200 total)
  - Incident rate of 5.5 cases/100 FTE
  - Higher than construction, manufacturing, and other private industry
    - In the 1990's hospitals and manufacturing had nearly equal rates, and construction was higher
- American Journal of Infection Control data:
  - 83,775 reported HCW COVID-19 cases with 52% work related exposures between March 2020-March 2021.
  - Annually approximately 385,000 sharps injuries
    - 56-88% were preventable
  - 441,344 bloodborne pathogen exposures (2.48/100 FTE)
  - Research shows adherence to standard precautions happens less than 50% of the time.

Pathways to Becoming an IP

Entry Pathways

- Due to the multi-disciplinary nature of infection prevention, IP's come from a variety of professional backgrounds including:
  - Nursing
  - Laboratory/Microbiologists
  - Public Health professionals
  - Allied Health professionals such as Respiratory Therapists or Medical Imaging
  - Information Technologists.

Certifications

- A-IPC Certification(Associate-Infection Prevention and Control)
- CIC (Certification in Infection Control) – most common.
- CIC-LTC (Certification in Infection Control –Long-term Care) – newer certification.
- Prior obtaining these certifications an IP may complete other training programs such as online courses offered by the CDC.

Areas of Practice

- Infection Preventionists or Infection Prevention Practitioners can work in a variety of clinical settings and depending on the size of the setting may cover multiple facilities or be part of a team of that covers one location:
    - Hospitals (Acute care, long-term care, critical access)
    - Surgery Centers, either hospital based or free standing
    - Ambulatory outpatient clinics
    - Long-term care and skilled nursing and rehab facilities (SNFs)
    - Public Health agencies both local and state level
    - Behavioral health units
    - Jails and prisons

General Functions an IP May Perform

- Infection Preventionists perform a variety of roles which may include:
  - Surveillance for clusters of infections or device associated infections, or surgical site infections
  - Report communicable diseases to public health agencies
  - Monitor antimicrobial usage for appropriateness
  - Observe, coach, and educate healthcare personal (HCP) on infection prevention practices such as PPE usage, hand hygiene, and cleaning of medical equipment
  - Communicate and consult with public health agencies
  - Integrate evidenced based infection control practices into policies, protocols, and educational materials
  - Help ensure compliance with accreditation agencies.
  - Monitor construction sites for compliance with health safety guidelines for construction projects.
  - Educate HCP and the general public on ways to limit the spread of diseases.

Public Health and Other Reporting

- Depending on the setting an IP works in they may have several types of data they are required to report to local, state, or federal agencies. These can include reporting of:
  - Communicable diseases
  - Outbreaks
  - Data on infections to NHSN/CDC
    - Includes surgical site infections (SSI)
    - COVID-19 related data
  - Data on IPC processes such as hand hygiene
  - Vaccination data
  - Data on facility processes related to infection control.

Communicable Disease Reporting

- 3 Categories based on suspected or confirmed organism.
  - Category I must be reported by phone to local health department within 24 hours of identifying a case or **suspected** case
  - Includes outbreaks of organisms that are not category I when isolated from a single patient.
    - Requires completion of an F44151
  - Category II must be reported by fax, mail, or electronic reporting within 72 hours of a case or suspected case
  - Category III covers HIV/AIDS specific reporting.

Category I Organisms

CATEGORY I:

Report these diseases <u>IMMEDIATELY</u> by telephone or fax to the local Public Health Officer upon identification of a case or suspect case.

In addition to the immediate report, an *Acute & Communicable Diseases Case Report* (DHS-44151) must be mailed (see page 1 for addresses of local Public Health Departments) or entered into the Wisconsin Electronic Disease Surveillance System within **24 hours.** See Chapter DHS 145.04(3)(a).

Anthrax [1,4,5]

Botulism (*Clostridium botulinum*) (including foodborne, infant, wound, and other) [1,2,4,5]

Cholera (*Vibrio cholera*) [1,3,4]

COVID-19 [1,2,6,7]

Diphtheria (*Corynebacterium diphtheria*) [1,3,4,5]

Haemophilus influenzae invasive disease (including epiglottitis) [1,2,3,5]

Hantavirus infection [1,2,4]

Hepatitis A [1,2,3,4,5]

Measles (Rubeola) [1,2,3,4,5]

Meningococcal disease (*Neisseria meningitidis*) [1,2,3,4,5]

Middle Eastern Respiratory Syndrome-associated Coronavirus (MERS-CoV) [2,3,4]

Pertussis (Whooping cough, caused by any *Bordetella* infection) [1,2,3,4,5]

Plague (*Yersinia pestis*) [1,4,5]

Polio virus infection (paralytic or nonparalytic) [1,4,5]

Primary Amebic Meningoencephalitis (PAM) (*Naegleria fowleri*) [2,4,5,6]

Rabies (human, animal) [1,4,5]

Ricin toxin [4,5]

Rubella [1,2,4,5]

Rubella (congenital syndrome) [1,2,5]

Severe Acute Respiratory Syndrome- associated Coronavirus (SARS-CoV) [1,2,3,4]

Smallpox [4,5]

Tuberculosis [1,2,3,4,5]

Vancomycin-intermediate *Staphylococcus aureus* (VISA) and Vancomycin-resistant *Staphylococcus aureus* (VRSA) infection [1,4,5]

Viral Hemorrhagic Fever (VHF) (including Crimean-Congo, Ebola, Lassa, Lujo, and Marburg viruses, and New World Arenaviruses) [1,2,3,4]

Yellow Fever [1,4]

Outbreaks, confirmed or suspected:
- Foodborne or waterborne [1,3,4,6]
- Occupationally-related diseases [6]
- Other acute illnesses [3,4,6]

Any detection of or illness caused by an agent that is foreign, exotic, or unusual to Wisconsin, & that has public health implications.[4]

CMS Reporting

Healthcare facilities have required reporting to receive reimbursement from Medicare/Medicaid through the NHSN:

- All facility units must be mapped within NHSN
- Catheter associated UTI (CAUTI)
- Central line associated blood stream infections (CLABSI)
- MRSA bacteremia
- C. difficile infections
- Surgical site infections (SSI)
- HCW Influenza and COVID-19 vaccination data
- Antimicrobial use and resistance data
- Generally on a quarterly basis except vaccination data

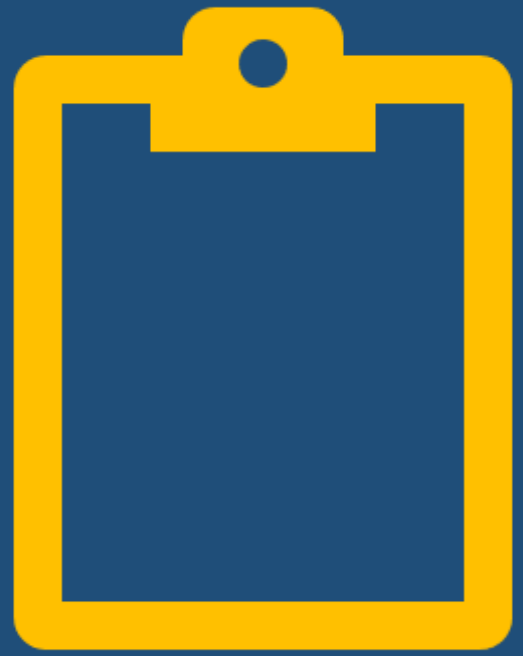
Improving Safety Practices in Lab

- Due to handling of blood, body fluids and other potentially infectious materials labs have a high chance for exposures.
  - High chance for environmental contamination.
  - Different exposure risks than other areas of hospital.
    - Pipetting, centrifugation, aerosols, equipment maintenance
  - In microbiology labs infectious agents are propagated requiring additional containment measures.
  - Handling and storage of concentrated chemicals in certain areas.

- In 2013 UCLA study half of respondents experienced an injury in the lab.
- US respondents: – 25% conduct formal risk assessments – 50% assessed risk only "informally"

Examples

- The first recorded laboratory-acquired infection (LAI) was a case of typhoid fever in 1885.
  - followed by cases of brucellosis, tetanus, cholera, diphtheria and sporotrichosis (1887 to 1904).
  - In 1919 the first laboratory safety manual was published by Fricke in Germany.
- Microbiology labs have higher rates of GI infections
  - Salmonella, Shigella, Brucella are most common.
  - Brucella exposures - 24% of LA bacterial infections, 11% of deaths.
- Pathology labs have higher risk of tuberculosis exposures and respiratory infections.
- Viral agents are the most common cause of LAI
- Lab acquired infections occurred in smaller labs of less than 25 employees (1972-1982 study).



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- 2005 study of data from 2002-2005 of 88 labs with 53 from hospitals with more than 200 beds
  - 57% of the labs reported at least one exposure
  - At least one Lab acquired infection was reported in 29 of the labs (33%)
    - 24 occurred in large facilities and 5 occurred in small facilities
- 2017 WSLH study found that many labs were missing safety criteria required for designation as a BSL-1, -2, or -3 lab.

Types of Risks

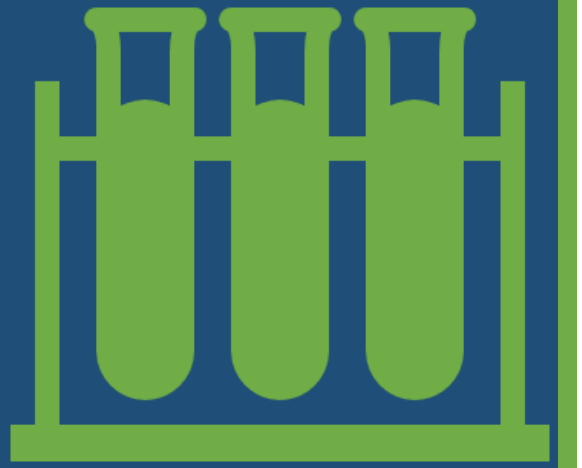
- Lab exposures are typically caused by five types of events.
  - Splashes
  - spills
  - Needlesticks
  - Skin cuts and abrasions
  - Non compliance with biosafety practices
- Due to high concentrations of patient specimens risk for exposures from every work surface.
  - Especially high touch/high volume areas
  - Risk of outside staff taking infectious materials out, or bringing them in.
  - Secondary exposures risks
- Waste disposal safety
- Exposure risks are dynamic and change with implementation of new:
  - Cleaning/disinfection products
  - New surfaces
  - Work processes
  - New equipment
  - New pathogens
- Need regular periodic review.
  - Annual assessments

Ways IP Can Help

- Understand that exposure risk is independent of test complexity; do not overlook potential exposure risks in waived test systems
- Perform risk assessments
- Integrate risk mitigation and prevention processes into every element of laboratory service
    - begin with initial training for new employees
    - follow through to competency assessment activities
    - Help establish ongoing monitoring program and audits

Risk – mitigate - Monitor

- Evaluate new products to ensure safety
    - Do new products or equipment create new exposure risks?
    - Do new technologies create new infection control concerns?
        - Increased use of POC devices
- Ensure appropriate cleaning and disinfection of equipment
    - Is new equipment compatible with current disinfection products?
- Monitor sterile processing practices.



Sample ICAR –POC Blood Testing

POC Blood Testing Facility Observations:

Ideally, make observations of at least 2 different staff. If direct observations cannot be gathered, then information can be obtained by asking staff.

Observation 1

1. Are clean supplies accessed in a manner to prevent contamination (e.g., is the test strip container accessed with clean hands from the clean supply cart prior to entering the patient/resident treatment area)?
   - ○ Yes
   - ○ No
   - ○ Not observed but endorsed by frontline staff
   - ○ Not observed and not endorsed by frontline staff

"Perform hand hygiene….before touching other medical supplies intended for use on other persons."
Source: https://www.cdc.gov/injectionsafety/blood-glucose-monitoring.html
"Maintain separation between clean and soiled equipment to prevent cross contamination."
Source: https://www.cdc.gov/hicpac/recommendations/core-practices.html

2. Do HCP perform hand hygiene before performing POC blood testing?
   - ○ Yes
   - ○ No
   - ○ Not observed but endorsed by frontline staff
   - ○ Not observed and not endorsed by frontline staff

"Use an alcohol-based hand rub or wash with soap and water for the following clinical indications:
a. Immediately before touching a patient.
b. Before performing an aseptic task (e.g., placing an indwelling device) or handling invasive medical devices."
Additional indications for when hands must be cleaned can be found in the link below.
Source: https://www.cdc.gov/hicpac/recommendations/core-practices.html

3. Do HCP wear gloves when performing POC blood testing?
   - ○ Yes
   - ○ No
   - ○ Not observed but endorsed by frontline staff
   - ○ Not observed and not endorsed by frontline staff

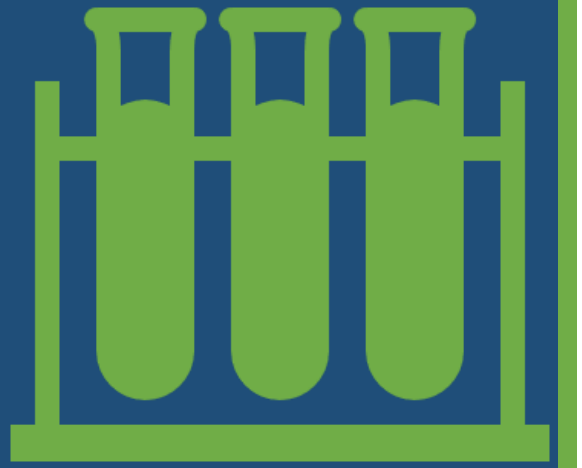
"Wear gloves during blood glucose monitoring and during any other procedure that involves potential exposure to blood or body fluids."
Source: https://www.cdc.gov/injectionsafety/blood-glucose-monitoring.html

Work Practice controls/Preventative Practices

- The goal of work practice controls is to alter the way a task is performed to reduce the likelihood of exposure to infectious agents.
- Criteria to consider:
- Access to hand hygiene facilities and education to staff
    - Would additional stations increase compliance?

Are staff aware of exposure risks/do prevention practices target these risks?

- Is training adequate?
- How are you educating staff with decreased training time (agency)?
- Workflows
    - Can they be simplified/steps reduced
    - does a lack of space or an irregular workflow encourage shortcuts or abbreviated biosafety measures?
- Traffic Patterns
    - Simplify movement of staff, specimens, patients
- Sample Collection
    - Potentially high risk of exposures (needlesticks, respiratory pathogens)



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- Inspect safety mechanisms
  - Are they intact and working? Are safer subs available?
  - Appropriate decontamination procedures – products, application times, when to use.
  - After spills/Routine disinfection – shift to shift
  - Are products compatible with work surfaces?
  - Are work surfaces safe or degraded increasing risk?
  - Will products degrade equipment surfaces, analyzers, POC devices?
  - Are better products available? Shorter contact times?
  - Are label claims adequate for pathogens that may be encountered?
    - Would a cheaper product increase safety risk?

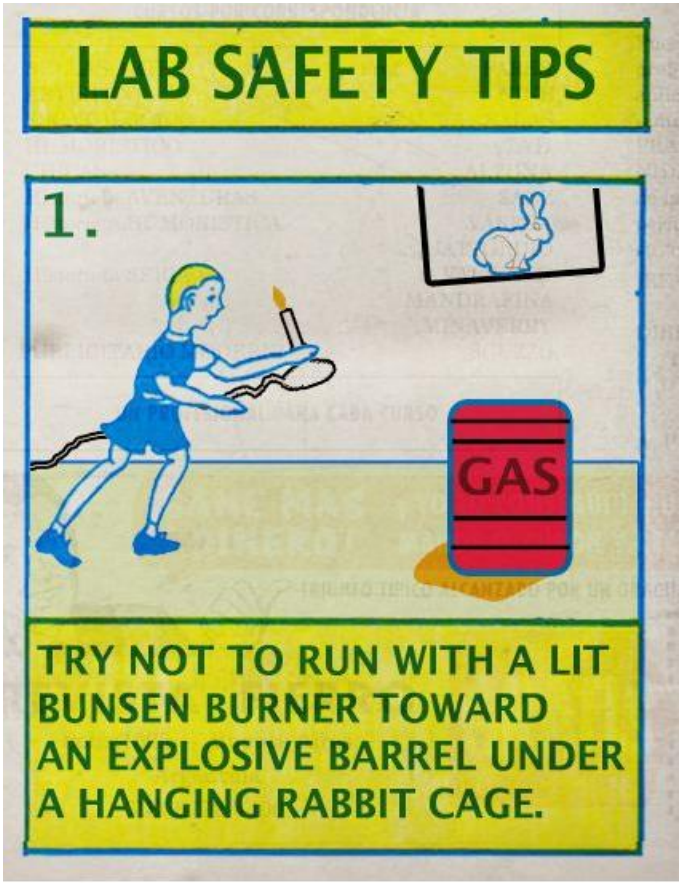
Checklist to Evaluate PPE Processes

Process Evaluation									
Process:	PPE Use Observation								
	Location 1		Location 2		Location 3		Location 4		
Elements to Be Assessed	Yes	No	Yes	No	Yes	No	Yes	No	**Notes/Areas for Improvement**
Supply: Gloves available outside each patient room/point of care									
Supply: Face masks available outside each patient room/point of care									
Supply: Gowns accessible, in case needed									
Supply: Alcohol-based sanitizer dispensers readily accessible and functional									
Use: Gloves - HCP follow proper donning procedures									
Use: Gloves - HCP follow proper doffing procedures									
Use: Gowns - HCP follow proper donning procedures (if applicable)									
Use: Gowns - HCP follow proper doffing procedures (if applicable)									
Use: Face masks - HCP follow proper donning procedures									
Use: Face masks - HCP follow proper doffing procedures									
Signs promoting PPE use displayed and visible									
PPE education available									
PPE education completed									
HCP follows procedures for proper disposal of PPE									

- In order to achieve optimal PPE use compliance consider the following factors:
- Are proper sizes available
- Convenient placement of PPE at point of need/use
- Convenient disposal locations
- Staff training
- System to indicate appropriate PPE use for specific patients (signage).
- If not in place compliance will go down.

Prevention Practices Continued…

- Are biological safety cabinets, physical barriers, and other special containment equipment available, properly maintained, and appropriate for the work being performed?
- Review safety of disposal processes to minimize risk for EVS.
  - Properly contain waste and remove
  - Process in accordance with law and regulations
- Review ventilation and airflow requirements.
- Create a process to monitor and audit air pressure relationships
- Process to clean and sanitize items that travel to other locations.

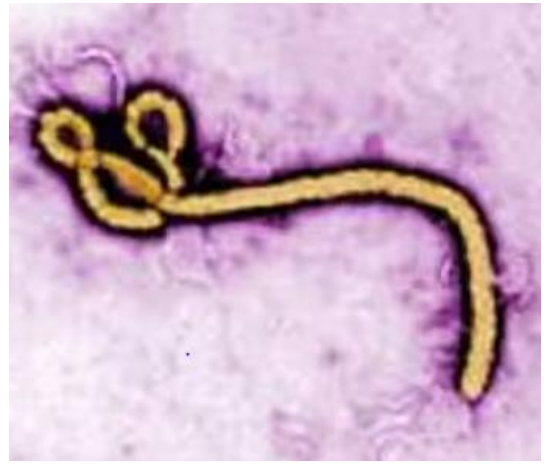


Help with Regulations & New Threats

- IP's will also monitor for regulatory updates related to Infection Control, epidemiologically important organisms, outbreaks, or new emerging pathogens.
- Disseminate updates through out the system
- Can help the lab identify potentially affected areas
- Plan mitigation strategies and set compliance goals
- Assist with implementation
- Update policies or advise on department specific questions related to safely implementing changes as needed.
- Help audit staff compliance with safety guidelines and provide data to department heads and administration.

Developing New Safety Processes for New Pathogens

- Ebola (2014-2016) West Africa epidemic
- US healthcare facilities had no experience treating Ebola
- New processes developed and staff trained.
  - Move PUI's to a private room w/ antechamber
  - Use of POC instruments to avoid contamination of analyzers
  - Safe handling of all waste
  - New PPE donning/doffing procedures
    - Inner and outer gloves with extended cuffs
    - Face shields and face masks, gowns or coveralls
    - Disinfect PPE while removing with multiple re-gloving steps

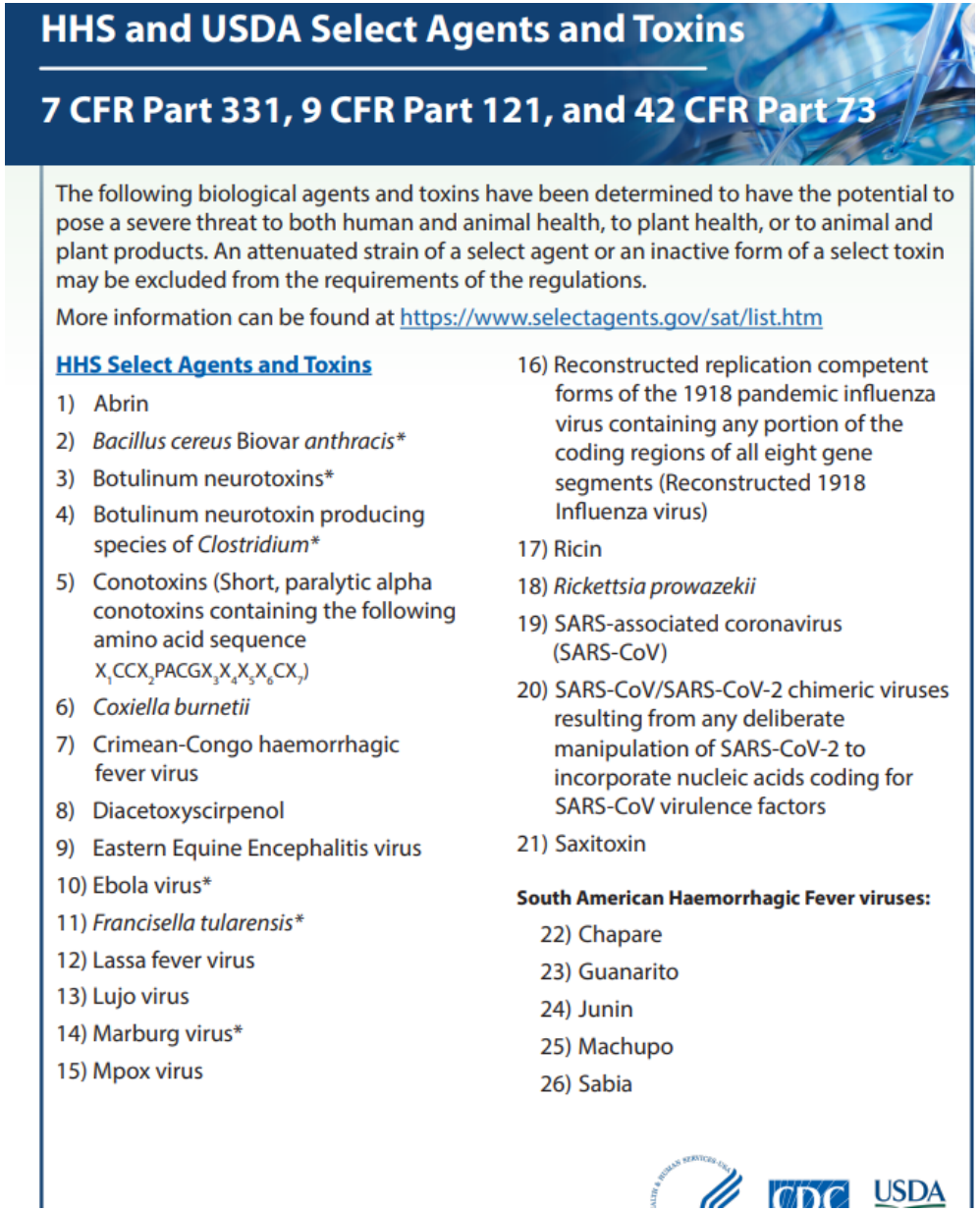


Pandemic Response

- Required frequent communication from the Infection Prevention team to all areas of the healthcare system
- Rapidly changing information.
- Create communications for multiple audiences – staff, patients, visitors
- Identify patterns of movement of patients, staff, specimens, waste
- Review existing safety and cleaning practices
  - Where are breakage points in current system.
  - Formulate new practices.
  - Monitor PPE burn rates
  - Advise on handling shortages in PPE
- Train staff in new practices or create training materials.
- Establish compliance audit systems
- Coordinate with public health authorities.

Exposure Investigation and Follow Up

- If hospital or lab personal have an exposure to a select agent organism your system IP can help with coordinating an investigation and reporting findings.
- These types of exposures often cross multiple departments including laboratory, nursing, and surgical teams, and sterile processing personnel.
    - Critical tasks include identifying potentially exposed personnel, monitoring for symptoms of disease, coordinating prophylaxis, timely reporting, cross organizational communications, disseminating education
- Can serve as a point of contact for follow up with the CDC, state, and local health departments.



HHS and USDA Select Agents and Toxins

7 CFR Part 331, 9 CFR Part 121, and 42 CFR Part 73

The following biological agents and toxins have been determined to have the potential to pose a severe threat to both human and animal health, to plant health, or to animal and plant products. An attenuated strain of a select agent or an inactive form of a select toxin may be excluded from the requirements of the regulations.

More information can be found at https://www.selectagents.gov/sat/list.htm

HHS Select Agents and Toxins

1) Abrin
2) *Bacillus cereus* Biovar *anthracis**
3) Botulinum neurotoxins*
4) Botulinum neurotoxin producing species of *Clostridium**
5) Conotoxins (Short, paralytic alpha conotoxins containing the following amino acid sequence $X_1CCX_2PACGX_3X_4X_5X_6CX_7$)
6) *Coxiella burnetii*
7) Crimean-Congo haemorrhagic fever virus
8) Diacetoxyscirpenol
9) Eastern Equine Encephalitis virus
10) Ebola virus*
11) *Francisella tularensis**
12) Lassa fever virus
13) Lujo virus
14) Marburg virus*
15) Mpox virus
16) Reconstructed replication competent forms of the 1918 pandemic influenza virus containing any portion of the coding regions of all eight gene segments (Reconstructed 1918 Influenza virus)
17) Ricin
18) *Rickettsia prowazekii*
19) SARS-associated coronavirus (SARS-CoV)
20) SARS-CoV/SARS-CoV-2 chimeric viruses resulting from any deliberate manipulation of SARS-CoV-2 to incorporate nucleic acids coding for SARS-CoV virulence factors
21) Saxitoxin

South American Haemorrhagic Fever viruses:

22) Chapare
23) Guanarito
24) Junin
25) Machupo
26) Sabia

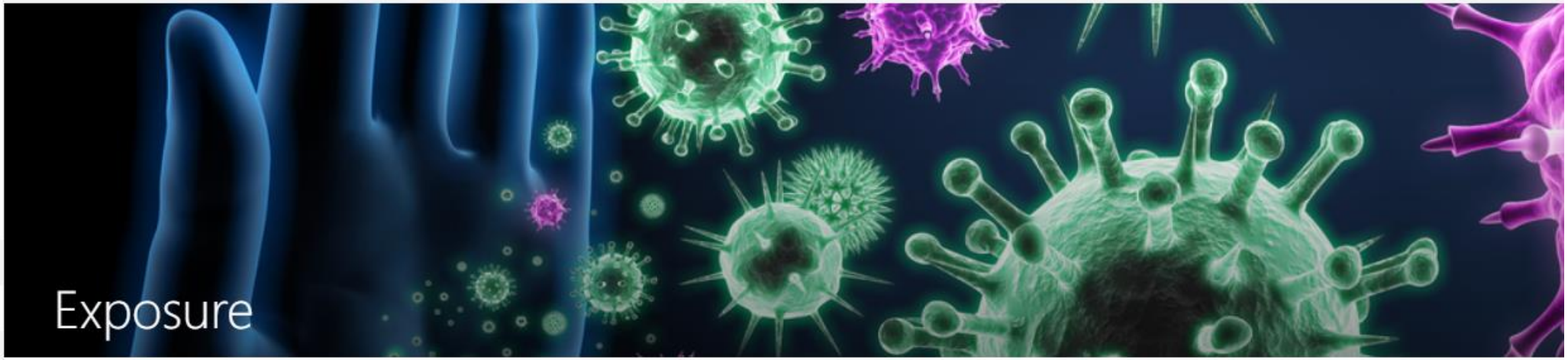
CDC USDA

System Website Pages

- If you organization has an internal website it uses the IP page can be an excellent location for a variety of information and save time needed to look through policies or distribute information throughout an organism
    - Guidelines for discontinuing transmission based precautions/MDRO management
    - Posting facility/system antibiograms generated by the microbiology lab for easy provider access
    - Hand hygiene and PPE use compliance rates by unit or department
    - System Healthcare Acquired Infection Rates (HAI)
    - Forms for exposure follow up.
    - Directions for handling situations involving pests like lice, scabies, bed bugs, etc.
    - Guidelines for clean supply storage
    - Directions for cleaning up blood and body fluid spills.
    - Updates on community viral surveillance during flu seasons that may guide facility or system masking policies for unvaccinated staff.

Home
IP Team
Location Specific Data
Communicable Diseas...
CDC Isolation Guidelin...
Respiratory Illness Res...
Education/Reference
MDRO Management
Exposure
Antibiograms
Bundles
Documents

Send by email



Bloodborne Pathogen Exposure

ThedaCare Team Members

- Post Exposure Follow Up Forms for Employees
- Post Exposure Prophylaxis Clinician Consultation
- Bloodborne Pathogen Exposure Control Plan

Non-ThedaCare Team Members

- Non-ThedaCare Exposure Checklist
- Non-ThedaCare Standard Work
- FAQ-Non-ThedaCare-BBP-Exposure

Sample Antibiogram

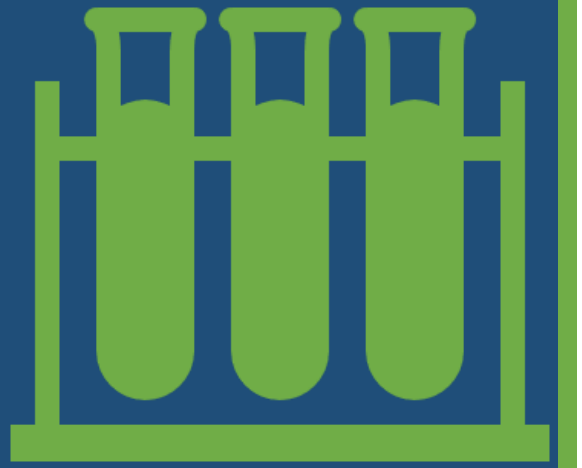
Organisms	Isolates	amoxicillin-clavulanic acid	ampicillin	ampicillin-sulbactam	benzylpenicillin	ceFAZolin	cefepime	cefOXitin	ceftazidime	ceftRIAXone	cefuroxime	ciprofloxacin	clindamycin	inducible clindamycin resistance	erythromycin	gentamicin	gentamicin high level synergy	imipenem	linezolid	nitrofurantoin	oxacillin	piperacillin-tazobactam	streptomycin high level synergy	tetracycline	tobramycin	trimethoprim/sulfamethoxazole	vancomycin
Citrobacter freundii	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Enterobacter cloacae complex	22	—	—	—	—	0	95	0	86	81	—	100	—	—	—	100	—	—	—	40	—	86	—	—	100	90	—
Enterococcus faecalis	21	100	100	100	100	—	—	—	—	—	—	80	—	—	15	—	85	100	100	100	—	—	95	33	—	—	100
Escherichia coli	408	—	68	76	—	97	100	94	99	99	—	92	—	—	—	95	—	—	—	97	—	98	—	—	95	87	—
Escherichia coli, ESBL Positive	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Klebsiella oxytoca	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Klebsiella pneumoniae ssp pneumoniae	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Klebsiella pneumoniae, ESBL positive	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Methicillin Resistant Staph Aureus	17	0	—	0	0	—	—	—	—	0	0	47	76	94	17	94	—	0	100	100	0	—	—	82	—	94	100
Morganella morganii ssp morganii	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Proteus mirabilis	30	—	90	96	—	93	100	100	100	100	—	96	—	—	—	90	—	—	—	0	—	100	—	—	90	93	—
Pseudomonas aeruginosa	33	—	—	—	—	0	96	—	93	—	—	90	—	—	—	96	—	—	—	—	—	90	—	—	100	—	—
Serratia marcescens	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Staphylococcus Aureus (MSSA)	50	100	—	100	28	—	—	—	—	100	98	84	84	90	64	100	—	100	100	100	100	—	—	96	—	100	100
Staphylococcus epidermidis	24	21	—	21	4	—	—	—	—	21	21	54	50	95	33	95	—	21	100	100	21	—	—	83	—	54	100
Staphylococcus, coagulase negative	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Streptococcus pneumoniae	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Surgical Site Infections

- The CDC healthcare-associated infection (HAI) prevalence survey found that there were an estimated 110,800 surgical site infections (SSIs) associated with inpatient surgeries in 2015.
- SSI accounts for 20% of all HAIs and is associated to a 2-to 11-fold increase in the risk of mortality with 75% of SSI-associated deaths directly attributable to the SSI .
- Reporting data on SSI to surgeons has been shown to help reduce infection rates
    - Can occur with inpatient or outpatient procedures.
    - Procedures are broken down into categories by location and type of procedure and depth:
        - Superficial incisional, deep incisional, and organ/space SSI events.
        - SSI surveillance extends a number of days post procedure determined by the type of procedure
            - Superficial incisions monitored for 30 days, knee replacements monitored for 90 days.

SSI Investigations

- The IP will review a checklist of items that may help identify process breakdowns leading to the SSI:
  - Preadmission process
  - General health information prior to surgery: age, BMI, skin condition, smoking history, diabetes, immunosuppression, other infections/antibiotics
  - Anti-staphylococcal decolonization
  - Type of wound (clean, clean-contaminated, contaminated, dirty, infected)
  - Hair removal
  - Blood glucose levels
  - Antibiotic prophylaxis pre/post-Op
  - Skin prep before the incision
  - Surgical suite environmental factors
  - Duration of procedure
  - IC procedure lapses
  - Intra-operative incidents
  - Wound dressings and changes
  - Condition of the wound post-Op
  - Discharge disposition (home, LTC)
  - Discharge instructions



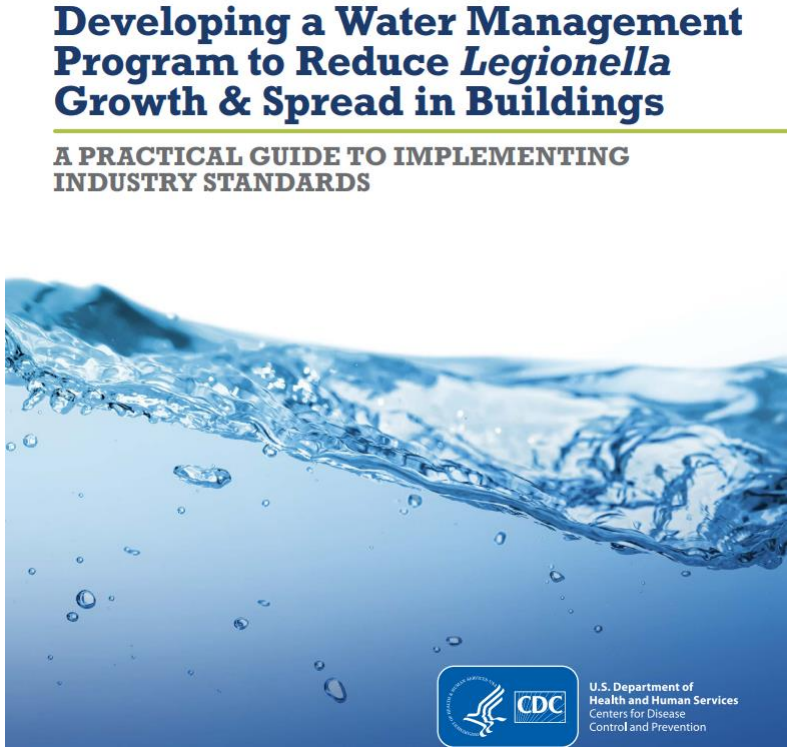
Water Breaches

- An IP will investigate water breeches caused by storm water or breaks in the plumbing system and help identify the source of the breech and determine the level of response needed and make recommendations to prevent recurrence.
- Ensure countermeasures meet requirements of the mold abatement policy.
    - Materials that do not dry with 72 hours should be removed. Advise on safety measures for disposal
    - Evaluate appropriateness of bleach decontamination
    - Response measures if mold is found
    - Advise on ventilation/air handling measures and PPE use

- Determine if local staff can complete remediation or is an outside vendor needed?
- Monitor progress of remediation

Water Management Plans

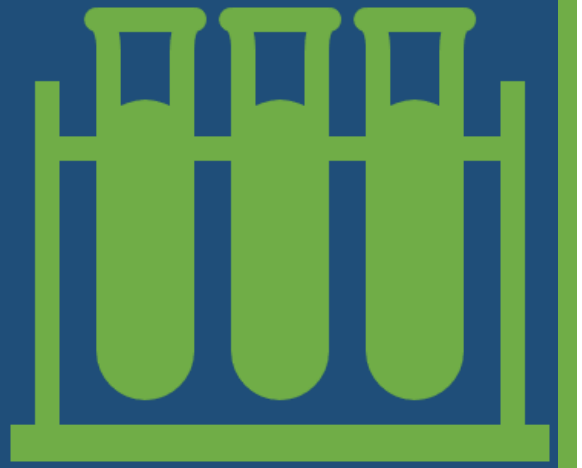
- To maintain a safe patient care environment building water systems are monitored for several factors
  - Temperature
  - Chlorine levels
  - Legionella growth
  - Total bacterial counts
- Factors leading to Legionella growth:
  - Biofilm
  - Scale and sediment
  - Water temperature fluctuations
  - pH
  - Low disinfectant levels
  - Water stagnation
- Resources:
  - CDC
  - ASHRAE Guideline 12-2020



Goals of Water Management

- Store hot water at temperatures above 140°F (60°C) and ensure hot water in circulation does not fall below 120°F (49°C). Recirculate hot water continuously, if possible.
- Store and circulate cold water at temperatures below the favorable range for Legionella (77–113°F, 25–45°C); Legionella may grow at temperatures as low as 68°F (20°C).
- Ensure a disinfectant residual is detectable throughout the potable water system
- Ensure weekly flushing of low flow or dead leg areas and infrequently used fixtures

- Areas of increased risk
  - Fire suppression systems
  - Eye wash stations and safety showers
  - Ice Machines
  - Patient care devices
    - CPAPs, scalers, bronchoscopes
  - Decorative fountains
  - Evaporative air coolers



Responding to an Outbreak

- Responding to a suspected Legionella outbreak
  - Confirm presence of Legionella before remediation
  - Contact local public health authority for reporting.
  - Choose remedial measures.
    - Point disinfection and flushing
    - Chemical shocking (permit may be required)
    - Heat shock not recommended
  - Confirm elimination of Legionella after remediation
  - Review WMP plan
    - Verify that control activities are occurring
    - Are current control activities effective?
      - Are new ones needed?

Healthcare Construction

- Construction work inside an active healthcare facilities requires more precautions than building a new facility from the ground up to protect patients and staff.
- During the planning stages the IP will consult to complete an Infection Control Risk Assessment (ICRA) and make safety recommendations.
- Factors to consider include the types of units and patients (surgical, immunocompromised, oncology, etc.) that will be close to the site.
- The levels of precautions taken can vary depending on the fragility of those patients.
- Basic goals include measures to control and contain the migration of dust, moisture, and other potential contaminants, and monitor fire detection and prevention systems, or temporary safety measures if these are disrupted.

Risk Assessment Templates

TYPE A	**Inspection and Non-Invasive Activities.** Includes, but is not limited to: ▪ removal of ceiling tiles for visual inspection limited to 1 tile per 50 square feet ▪ painting and wet sanding ▪ wallcovering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection.
TYPE B	**Small scale, short duration activities which create minimal dust** Includes, but is not limited to: ▪ installation of telephone and computer cabling ▪ access to chase spaces ▪ cutting of walls or ceiling where dust migration can be controlled. ▪ dry sanding of walls for painting or wall covering ▪
TYPE C	**Work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies** Includes, but is not limited to: ▪ removal of floorcoverings, ceiling tiles and casework ▪ new wall construction ▪ minor duct work or electrical work above ceilings ▪ major cabling activities ▪ any activity which cannot be completed within a single work shift
TYPE D	**Major demolition and construction projects** Includes, but is not limited to: ▪ activities which require consecutive work shifts ▪ requires heavy demolition or removal of a complete cabling system ▪ new construction

Low Risk	Medium Risk	High Risk	Highest Risk
▪ Office areas ▪ Conf. rooms	▪ Cardiology ▪ Echocardiography ▪ Endoscopy ▪ Nuclear Medicine ▪ Physical Therapy ▪ Radiology/MRI ▪ Respiratory Therapy	▪ CCU ▪ Emergency Room ▪ Labor & Delivery ▪ Laboratories (specimen) ▪ Newborn Nursery ▪ Outpatient Surgery ▪ Pediatrics ▪ Pharmacy ▪ Post Anesthesia Care Unit ▪ Surgical Units ▪ Medical Units	▪ Any area caring for immunocompromised patients ▪ Cardiac Cath Lab ▪ Central Sterile Supply ▪ Intensive Care Units ▪ Negative pressure isolation rooms ▪ Oncology ▪ Operating rooms including C-section rooms

Step 3: *Match* the

Patient Risk Group (***Low, Medium, High, Highest***) with the planned **...**

Construction Project Type (***A, B, C, D***) on the following matrix, to find the **...**

Class of Precautions (***I, II, III or IV***) or level of infection control activities required.

Class III-IV or are shaded on the following page.

IP Matrix - Class of Precautions: Construction Project by Patient Risk

Construction Project Type

Patient Risk Group	TYPE A	TYPE B	TYPE C	TYPE D
LOW Risk Group	I	II	II	III/IV
MEDIUM Risk Group	I	II	III	IV
HIGH Risk Group	I	II	III/IV	IV
HIGHEST Risk Group	II	III/IV	III/IV	IV

Note: When the matrix indicates that Class III or Class IV control procedures are necessary, an Infection Control Risk Assessment, ICRA, needs to be completed, Infection Prevention approval is required and environmental containment or barriers will be needed as part of the project.

Step 3 result: I_____

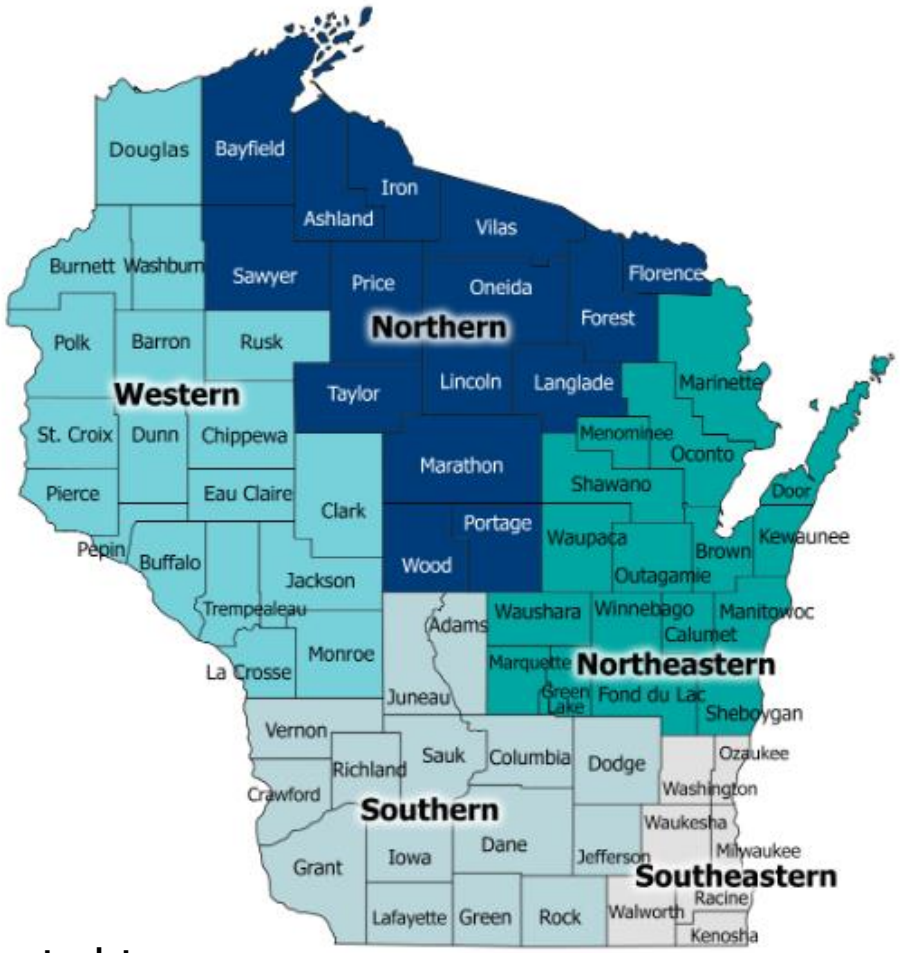
Construction Project Control Measures

	During Construction Project	Upon Completion of Project
CLASS I	1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace a ceiling tile displaced for visual inspection	
CLASS II	1. Provide active means to prevent airborne dust from dispersing into atmosphere. 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with tape. 4. 5. Place dust mat at entrance and exit of work area 6. Remove or isolate HVAC system in areas where work is being performed.	1. Wipe work surfaces with disinfectant. 2. Contain construction waste before transport in tightly covered containers. 3. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 4. Remove isolation of HVAC system in areas where work is being performed.
CLASS III	1. Remove or Isolate HVAC system in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from the area adjacent to work area or implement control cube method before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Contain construction waste before transport in tightly covered containers. 5. Cover transport receptacles or carts. Tape covering unless solid lid.	1. Do not remove barriers from work area until thoroughly cleaned by the owner's Environmental Services Department. 2. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 3. Contain Construction waste before transport in covered containers. 4. Vacuum work area with HEPA filtered vacuums. 5. Wet mop area with disinfectant. 6. Remove isolation of HVAC system in areas where work is being performed.
CLASS IV	1. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Seal holes, pipes, conduits, and punctures appropriately. 5. Construct anteroom and require all personnel to pass through this. 6. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and Infection Control Department and thoroughly cleaned by the owner's Environmental Services Department.	1. Do not remove barriers from work area until 2. thoroughly cleaned by the owner's Environmental Services Department 3. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction. 4. Contain construction waste before transport in tightly covered containers. 5. Vacuum work area with HEPA filtered vacuums. 6. Wet mop area with disinfectant. 7. Remove isolation of HVAC system in areas where work is being performed.

WI Department of Health Services Resources

- The Wisconsin Healthcare-Associated Infections (HAI) Prevention Program conducts statewide HAI surveillance and provides technical assistance in a variety of areas for health care and public health partners, including infection prevention and control, the National Healthcare Safety Network (NHSN), multidrug-resistant organism containment, and antimicrobial stewardship.

Wisconsin Regions



https://www.dhs.wisconsin.gov/hai/contacts.htm

DHS WI Regional and Subject Matter Expert Infection Prevention Team

Regional Infection Preventionists

- Wisconsin has 5 Regions
  - Excellent contacts for general infection control questions and technical assistance, MDRO containment and antimicrobial stewardship
  - Can help find additional resources as required

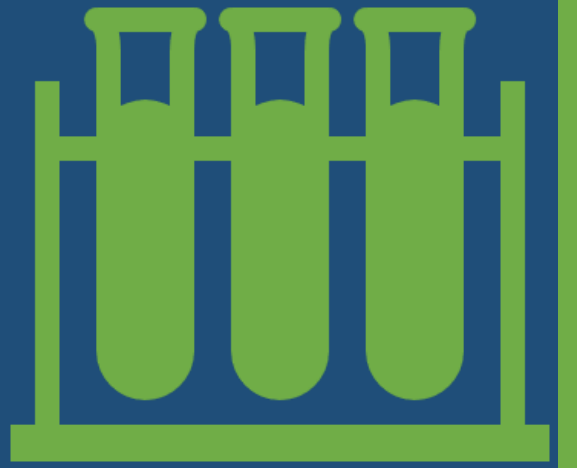
Specialist IP team

- Expertise in specific settings
  - Ambulatory care
  - Dialysis
  - MDRO’s
  - Outbreaks and emerging diseases
  - Infection Preventionist onboarding.
  - Special projects

DHS WI Website Offerings

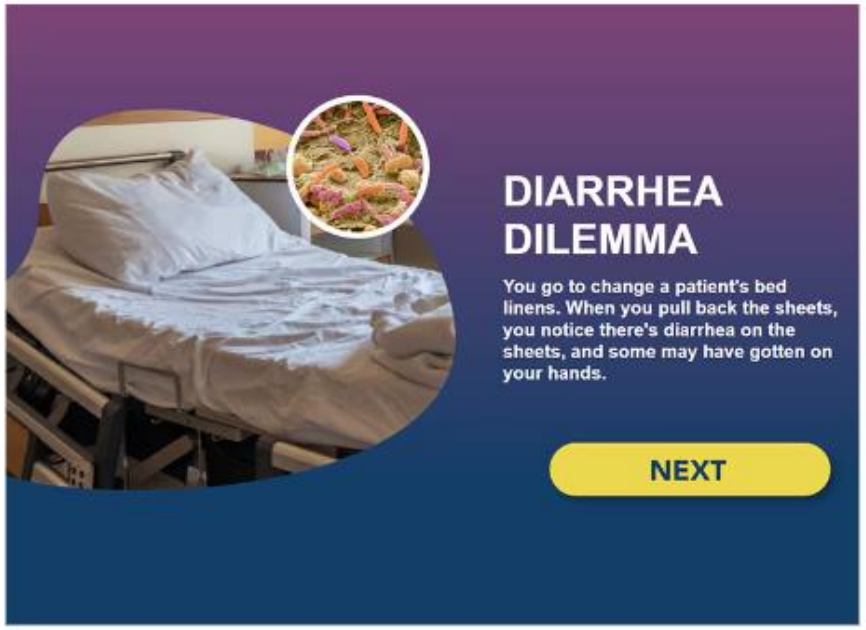
The HAI pages offer a content for healthcare professionals and non-professionals:

- Education for Patients and families to avoid infections and signs to watch for
- Annual data reports on HAI's throughout the state taken from NHSN data
- State specific information on Standardized Infection Ratios (SIRs)
- Statewide Surgical Site Infection (SSI) data.
- Infection Control audit & risk assessment tools (hand hygiene, PPE, non-critical item disinfection).
- Transmission based precautions reference guide
- Infection Preventionist starter kit download designed to help establish an IP program
- IP bootcamp classes
- Webinars such as IP Lunch and Learn
- Links to the CDC Project Firstline content:
- Videos designed to provide infection control principles education for frontline staff.
- Micro-learn PDFs on selected topics
- Power points and training resources that can be used to train staff on infection risks they will encounter while working.
- Downloadable facts sheets and FAQs
- Resources for respiratory protection programs
- Reportable exposure resources



Interactive Scenarios Example

Modules to provide education on the sequence of steps to take to reduce infection risks:



Diarrhea Dilemma

What's wrong with this picture activities:

Emergency Room

Nurses Station

Antibiotic Resistance Laboratory Network

Information and Links to this WSLH initiative

Healthcare-Associated Infections: Antibiotic Resistance Laboratory Network

The Antibiotic Resistance Laboratory Network (ARLN) is a national network that was established by the CDC (Centers for Disease Control and Prevention) in the fall of 2016. It is made up of public health laboratories and epidemiologists throughout the U.S. The Wisconsin State Laboratory of Hygiene (WSLH) is the regional ARLN reference laboratory in the Midwest.

The ARLN works closely with the CDC, regional public health laboratories, and clinical laboratories to support nationwide laboratory capacity to detect antibiotic resistance in health care, food, and the community, and to control and prevent the spread of antibiotic-resistant organisms.

Resources

- Wisconsin State Laboratory of Hygiene AR Lab Network Resources website: Information on specific organisms, including instructions for collection of colonization swabs.
- Wisconsin State Laboratory of Hygiene Fighting Antibiotic Resistance in the Midwest: Information on Wisconsin's role in the ARLN.

Safety first, science always!