

# Infection Control in the Clinical Laboratory Environment

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# Learning Objectives

At the conclusion of this presentation, participants will be able to:

- Apply infection prevention & control (IC) principles in the clinical laboratory environment
- Understand exposure risks in the laboratory
- Recognize opportunities for process surveillance activities in the laboratory



# Protecting Patients, Staff, and Visitors

- LAIs versus HAIs
- It can look different than IP/IC in the acute care setting

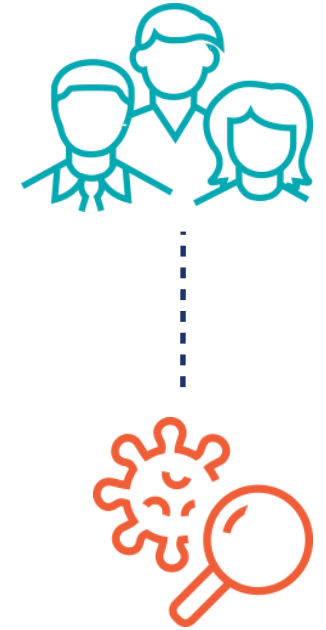
## *The Laboratory is not a Nursing Unit*

- Risks reflect a unique environment
- The Joint Commission surveys IC because it is important...to **YOU**



# Laboratory-Acquired Infections (LAIs)

- Most LAIs occur in laboratories with <25 employees.
- Pathology (AP) laboratories have a greater risk of tuberculosis and other respiratory infections.
- Microbiological laboratories have a greater incidence of gastrointestinal infections.
- Transmission to the general public can also occur; SARS [CoV 1 and 2], novel influenza A (H1N1).



***Voss & Nabuus-Franssen, Infectious Disease Advisor, Decision Support in Medicine. 2017.***

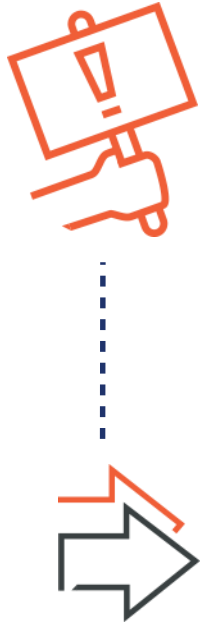
# Infection Control for the Laboratory

- Implement and sustain a risk management process to mitigate or minimize risk to staff and the community
- Assess the efficacy of risk mitigate practices
- Align laboratory prevention practices and control processes with the organization's overarching goals
- Integrate risk mitigation and prevention processes into training and competency assessment activities (awareness and compliance)



# The Basics

- Identify **RISKS**
- Develop and implement **PREVENTION PRACTICES** (i.e., **PROCESSES**)
- Monitor staff compliance through **PROCESS SURVEILLANCE**
- Yes, there is more, but these are the basic elements for the laboratory as defined in the accreditation standards



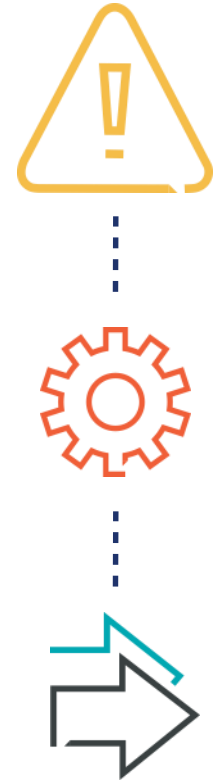
# Infection Risks in the Laboratory Environment

- Blood, body fluids, tissues, exudates, sputum, swabs
- Microbiology culture media waste
- Sharps
- High-touch work surfaces
- Air pressure relationships
- Traffic volume & flow
- “Outside” individuals in the laboratory



# Characterizing the Risks

- Density-dependent risks (unique in quantity or concentration)
- Amplified & propagated risks
- Receive, store, and dispose of waste
- Laboratories are “dirty” places
- Direct and indirect transmission
- Environment and infrastructure are highly integrated into infection control & prevention activities





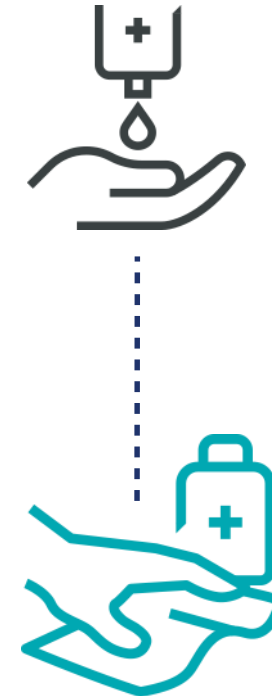
# Risk Assessment Might be Hospital-Wide

- Great! That's not a problem; better integration.
- How has the laboratory participated in the assessment?
- Look for risk-based goals & activities.
- What is the plan for process surveillance? Is it working?
- Local, state, and federal reporting



# What are Prevention Practices (Processes)?

- Ergonomic
- Engineered
- Hand hygiene
- PPE (escalated response)
- Clean and disinfect
- Disposal of potentially hazardous waste
- Environment and ventilation
- Contain, restrain, and maintain



# Look at Your Laboratory with a Fresh Perspective

- Observe use of PPE & prevention practices
- How does the laboratory environment look? Can it be cleaned and disinfected?
- How is trash disposed at the bench?
- Can spills be cleaned?
- Are there hand washing facilities?
- ABHR: Expiration, when/where to use



# Look at These Items...

- Bench tops, cabinets, ceilings
- Hand washing stations in the laboratory
- Fans and disruptive air movement that spread aerosolized material
- Good in the hood
- “Travelers” like carriers (totes), containers, carts, mobile workstations, logbooks, clipboards



# What is Process Surveillance?

- Assessing staff compliance with prevention practices (“processes”)
- Focus on CDC recommendations
- Data-driven
- Compliance rates (often seen as hand hygiene in the acute care setting)
- Consider all prevention practices, a holistic view



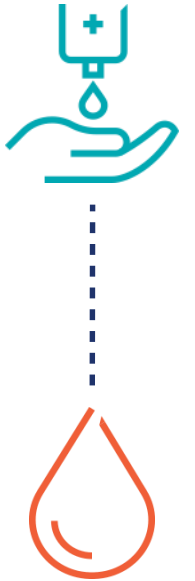
# Infection Control Practices

- Look for process surveillance activity ***EVERYWHERE***
- IC integrated into PI activities
- Ask your staff about infection prevention practices during observations, competency assessments
- Adapt to teaching mode as it benefits your laboratory



# Some Practices (Processes) to Observe

- POC observations: low-level disinfection, wet exposure time
- Transmission-based precautions
- Hand hygiene in the laboratory, not just for laboratory staff
- Phlebotomy observations, consider introducing process surveillance
- Blood culture contamination (link to pre-analytic risk)



# Glucometers...What is the Problem?

- Transfer of OPIM
- The work area (high-touch surfaces)
- FDA approved for clinical use, must be able to achieve low-level disinfection
- Read the label on the surface treatment product
- Fomites: Charging/syncing cradle, glucometer caddy
- Stop, drop, and roll (device cracked or open at seam)





# Evaluate & Improve IC Status

- Evidence of evaluation and review (QA or PI linked activities?)
- Are laboratory goals consistent and integrated into hospital-wide activities?
- Evaluate all **laboratory services** (POC, outpatient phlebotomy, ABG, AP, housekeeping, others?)
- Links to IQCP, PI, competency assessment?



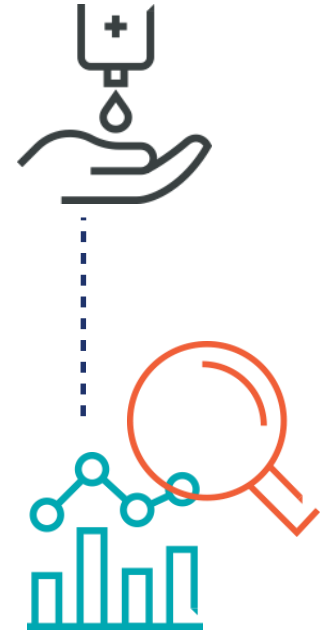
# Infection Control in the Laboratory Accreditation Standards

- IC: 11 Standards consisting of 49 EPs
- NPSG 7: Hand hygiene
- Linked elements in EC & QSA Sections
- Foster activities that emphasize communication and collaboration (sync with Emergency Management)
- Highly integrated processes; a cohesive effort



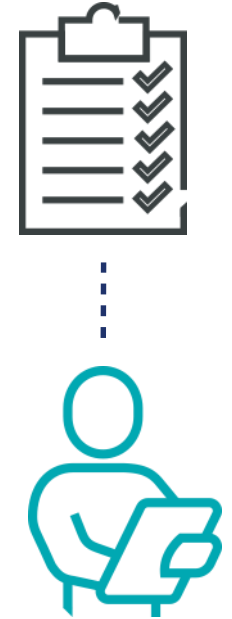
# NPSG 7: Hand Hygiene

- Critical focus on hand hygiene
- Adopt guidelines: CDC or WHO
- Laboratory must comply with hand hygiene guidelines
- Goals to improve compliance
- Process surveillance (“monitoring”): data collection & analysis
- The laboratory is a specialized environment, many people are in that setting



# Understanding Hand Hygiene

- CDC or WHO recommendations
- “Five Moments”
- Process surveillance (monitor activity)
- Surveying hand hygiene (watch **everyone** in the laboratory, not just laboratorians) – hand hygiene compliance is a systematic process



# What Does “Good” Look Like?

- The laboratory
  - Observes tasks and practices, not locked into individual performance
  - Provides feedback, encouragement, education, and accountability
  - Aligns the organization performance goals, targeted activities, and observation patterns
  - Monitors risks & goals, valid metric for assessment



# Selected References

- Centers for Disease Control and Prevention (CDC)
  - Biosafety in Microbiological and biomedical laboratories, 5<sup>th</sup> ed. CDC and NIH, 2007
  - Guideline for Hand Hygiene in Health-Care Setting. MMWR, October 2002
  - Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008
- Occupational Safety and Health Administration (OSHA)
  - Laboratory Safety Guidance (OSHA 3404-11R, 2011)



# Selected References

- World Health Organization (WHO)
  - CEN Laboratory Biorisk Management Standard CWA15793; 2008
  - WHO Guidelines on Hand Hygiene in Health Care; 2009
  - My Five Moments for Hand Hygiene; 2008



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**THANK YOU.**

# QUESTIONS?

