


# Infection Control and Prevention of HAI FY25

## 1. HAI-FY25

### 1.1 Infection

LEHIGH VALLEY HEALTH NETWORK

## Infection Control and Prevention of Healthcare-Associated Infection (HAI)



Recommendations for the  
Control and Prevention of HAI

## 1.2 Course Information

L E H I G H V A L L E Y H E A L T H N E T W O R K

### Course Information

Course Title:	Infection Control and Prevention of Healthcare-Associated Infection (HAI)
Regulations/Standards:	The Joint Commission National Patient Safety Goal 7: Reduce the risk of healthcare-associated infections.
Approximate time to complete:	20 Minutes
Content Version:	Clinical Staff
Intended Audience:	Clinical Staff
Technical Specifications:	This course contains no audio
Date Revised:	December 2024
Contact Information	Infection Control at:
Please call the Technical Support Desk at 610-402-8303 with any technical issues.	

### 1.3 Objectives

L E H I G H V A L L E Y H E A L T H N E T W O R K

## Objectives

**Upon completion of this course, you should be able to:**

- Identify strategies that can reduce the risk of developing a surgical site infection.
- List the key elements in the Central Line Bundle.
- Discuss key facts about specific multi-drug resistant organisms in the healthcare setting.
- Explain methodologies that can help decrease the likelihood of developing a Catheter Associated Urinary Tract Infection.
- Describe the Antimicrobial Stewardship program at LVHN.

## 1.4 Healthcare-Associated Infections

L E H I G H V A L L E Y H E A L T H N E T W O R K

### Healthcare-Associated Infections

#### Healthcare Associated Infection (HAI):

An infection that a patient develops while receiving treatment for medical or surgical conditions. The infection cannot be present at the time of admission to the hospital.

*HAIs must be reported to the Patient Safety Authority, the Pennsylvania Department of Health, and the Centers for Medicare and Medicaid Services (CMS).*



## 1.5 Healthcare-Associated Infections

L E H I G H V A L L E Y H E A L T H N E T W O R K

### Healthcare-Associated Infections

HAIs can be the result of:

- **Invasive medical devices** (central line-associated blood stream infections, catheter associated urinary tract infections, ventilator associated pneumonia)
- **Surgery** (surgical site infections)
- **Certain microorganisms present in healthcare settings:**
  - Multi-Drug Resistant Organisms (Methicillin Resistant *Staphylococcus Aureus* [MRSA], Vancomycin Resistant *Enterococci* [VRE], carbapenem-resistant enterobacteriaceae [CRE] and others)
  - *Clostridioides difficile* (C. Diff)



## 1.6 Prevention of HAI

L E H I G H V A L L E Y H E A L T H N E T W O R K

### Prevention of HAI

Hand Hygiene has long been recognized as the single most effective way to prevent the spread of infection.

Prevention of HAI is also possible through the application of certain best practices.

In this module, we will address key practices to prevent:

- Surgical Site Infections
- Central Line-Associated Blood Stream Infections
- Multi-Drug Resistant Organisms
- Catheter Associated Urinary Tract Infections

## **1.7 Surgical Site Infection Prevention**

L E H I G H V A L L E Y H E A L T H N E T W O R K

### **Surgical Site Infection Prevention**



**Preventative actions can reduce your patient's risk for developing a surgical site infection (SSI).**

**Surgical site infections are an infection that occurs after surgery in the part of the body where the surgery took place.**

## 1.8 Strategies to Prevent SSI

L E H I G H V A L L E Y H E A L T H N E T W O R K

### Strategies to Prevent SSIs

#### Reduce Patient Related Risks

- Encourage patients to:
  - Control their serum glucose levels
  - Lose weight
  - Stop smoking
- Identify and treat any infections that the patient may already have before they have elective surgery.
- Decontaminate skin pre-operatively as directed by the surgeon and hospital policy.
- Decontaminate nose pre-operatively as directed by the surgeon and hospital policy.





## 1.9 Reduce Surgical Related Risks

L E H I G H V A L L E Y H E A L T H N E T W O R K

### Reduce Surgical Related Risks

**Procedure related risk factors can also be reduced. Follow these precautions to lower your patient's risk of developing a SSI:**

- Perform preoperative surgical scrub
- Wash and clean the skin around the patient's incision site
- Handle tissue carefully to reduce trauma
- Minimize operative time as much as possible
- Minimize operating room traffic
- Control blood glucose level during and after the procedure
- Maintain preoperative normothermia
- Only remove hair if it will interfere with the operation.  
If hair removal is necessary, use clippers.
  - Remove hair in the pre-operative area before the patient enters the operating room

## ***1.10 Reduce Surgical Related Risks***

L E H I G H V A L L E Y H E A L T H N E T W O R K

### **Reduce Surgical Related Risks**

#### **Ways to prevent SSIs:**

- Minimize talking during the procedure
- Adhere to dress code policies
- Assure all equipment and instruments are properly decontaminated and sterilized per hospital policy
- Assure environmental decontamination is performed



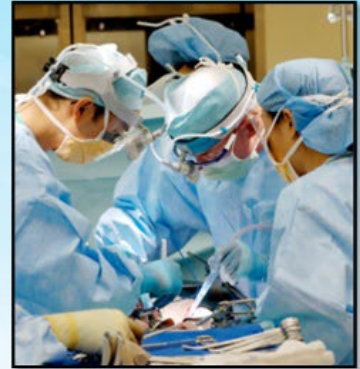
## ***1.11 Reduce Surgical Related Risks***

L E H I G H V A L L E Y H E A L T H N E T W O R K

### **Reduce Surgical Related Risks**

#### **Other ways to prevent SSIs:**

- Minimize Operating Room Traffic Control
- Perform optimal room turn over cleaning/ disinfection
- Ensure proper temperature and humidity of the operating room
- Provide appropriate timing of antimicrobial prophylaxis as per national guidelines
- Provide adequate oxygenation
- Ensure adequate body temperature



## 1.12 Patient Involvement

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# Patient Involvement



**Learn More About. . .**

### Patient Safety Tips for the Surgical Patient

At Lehigh Valley Health Network, your health and safety are important to us. While having surgery at our hospital, we will follow the steps listed below to make sure you are safe. Patients or their family members can prevent some complications from happening to you.

**Step 1: Making sure you are safe**

- While you are in the hospital, make sure your name is and your identity is correct.
  - Do not sign any documents until you have been checked by a nurse.
  - Ask the nurse to check your name and identity.
- Make sure you are safe.
- If something goes wrong, let the health care team know.

### Patient Safety Tips for the Surgical Patient

Information is available in Epic to educate patients and their families on prevention of adverse events in surgery.

- How hospitals prevent SSIs
- How patients can prevent SSIs

## ***1.13 Central Line-Associated Blood Stream Infection***

L E H I G H V A L L E Y H E A L T H N E T W O R K

### **Central Line-Associated Blood Stream Infection**

#### **Prevention**

Evidence-Based Practices to prevent the  
incidence of infection





## 1.14 Central Line

L E H I G H V A L L E Y H E A L T H N E T W O R K

### Central Line

**A central line is a type of catheter (central venous catheter) that is:**

- Inserted through the skin
- Terminates at or close to the heart, or in one of the great vessels (vena cava, femoral vein, etc.)
- Used for infusion, withdrawal of blood, or hemodynamic monitoring

#### **Examples of Central Lines:**

- Single, Double, or Triple lumen catheters
- Peripherally inserted central catheters (PICC)
- Pulmonary artery catheters
- Hemodialysis catheters
- Implanted Ports
- Umbilical catheters in newborns

### ***1.15 Central Line-Associated Blood Stream Infection (CLABSI)***

L E H I G H V A L L E Y H E A L T H N E T W O R K

## **Central Line-Associated Blood Stream Infection (CLABSI)**



A **CLABSI** is a blood stream infection that is associated with the presence of a central line or an umbilical catheter in newborns.

## 1.16 CLABSI Prevention

L E H I G H V A L L E Y H E A L T H N E T W O R K

### CLABSI Prevention

#### Central Line Bundle:

- ***Hand Hygiene***
  - For catheter insertion, perform hand hygiene prior to putting on gloves!
  - Hand hygiene should be carried out during all care and maintenance of central lines.
- ***Skin Antisepsis***
  - Use a hospital antiseptic solution and apply according to manufacturer's directions.

## 1.17 CLABSI Prevention

L E H I G H V A L L E Y H E A L T H N E T W O R K

### CLABSI Prevention

#### Maximal Barrier Precautions

##### **For Operator and Supervisor**

- Full sterile attire including eye protection

##### **For Assistants and All Others in the Room**

- Hair cover and mask with face shield/eye protection

##### **For the Patient**

- Cover patient's head and body with a large sterile drape (use more than one if needed for large patients)



## 1.18 CLABSI Prevention

L E H I G H V A L L E Y H E A L T H N E T W O R K

### CLABSI Prevention

#### Ways to help prevent a CLABSI:

- ***Optimal catheter site selection***
  - Physicians must weigh risks and benefits of site selection for patients individually.
  - Sites for central line insertion include:
    - Subclavian
    - Femoral
    - Juglar
    - Peripheral (PICC)



## 1.19 CLABSI Prevention

L E H I G H V A L L E Y H E A L T H N E T W O R K

### CLABSI Prevention

#### Daily Review of Line Necessity:

- Goal is to reduce the number of line days to reduce the risk of acquiring a CLABSI
- Include daily review of line necessity in multidisciplinary rounds
- Remove promptly when no longer needed



## ***1.20 Line Care and Maintenance***

L E H I G H V A L L E Y H E A L T H N E T W O R K

### **Line Care and Maintenance**

- Transparent, semi-permeable dressing is preferred.
  - Use hospital approved central line dressing
- Change transparent dressing every 7 days and whenever dressing is soiled or non-adherent.
- Disinfect catheter hubs and injection ports.
  - Use alcohol-impregnated caps on all ports
- Minimize manipulation of the catheter.
- Avoid antibiotic ointment at the catheter insertion site.

## 1.21 Additional Prevention Measures

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# Additional Prevention Measures

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Emergency Operations &

Type	Ver #	Title	Status	Actions
PDF	3	Central Catheter - Venous or Arterial - Patient Care Services	Published	...
PDF	5	CPG - Post Partum Hemorrhage - Obstetrics	Published	...
PDF	1	CPG_IP_Bowel_Resection	Published	...
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## ***1.22 Multi-Drug Resistant Organisms (MDRO)***

L E H I G H V A L L E Y H E A L T H N E T W O R K

# **Multi-Drug Resistant Organisms (MDRO)**

**Recommendations for the  
Control and Prevention of MDRO**



## 1.23 Multi-Drug Resistant Organisms

L E H I G H V A L L E Y H E A L T H N E T W O R K

### Multi-Drug Resistant Organisms

MDROs are microorganisms, mostly bacteria, that are resistant to one or more classes of antimicrobial agents, or antibiotics.

Types of resistant organisms include:

- *Clostridioides difficile* (C. Diff)
- *Methicillin-Resistant Staphylococcus aureus* (MRSA)
- *Vancomycin-Resistant enterococci* (VRE)
- *MDR Acinetobacter baumannii*
- *Carbapenem-resistant Enterobacteriaceae* (*Carbapenemase-producing Enterobacteriaceae*) – CRE
- Extended spectrum *beta-lactamase* producers (ESBL)



## 1.24 Key Concepts in Transmission

L E H I G H V A L L E Y H E A L T H N E T W O R K

### Key Concepts in Transmission

#### Who is At Risk?

- Patients with severe disease
  - Underlying medical conditions
  - Recent surgery
  - Indwelling medical devices such as urinary catheters, endotracheal tubes, or IVs
- Hospitalized patients

#### Other Risk Factors?

- Antibiotic use
- Presence of larger number of colonized (organisms are present but not causing infection) patients
- Contamination of healthcare worker's hands and environmental surfaces

## 1.25 MDRO Precautions

L E H I G H V A L L E Y H E A L T H N E T W O R K

### MDRO Precautions

#### Hand hygiene before and after patient contact

- Alcohol-based waterless hand sanitizer is preferred\*
- Use antibacterial soap and water when hands are visibly dirty

\* *EXCEPT* for patients with C. Diff and Norovirus, washing with soap and water is preferred



## 1.26 Special Precautions for C. Diff

L E H I G H V A L L E Y H E A L T H N E T W O R K

### Special Precautions for C. Diff

#### *Special precautions for C. Diff:*

- Practice strict hand hygiene
  - Hand sanitizer upon entry, wash with soap and water upon exit
  - Utilize antibacterial soap after patient contact and contact with the patient's environment



## 1.27 MDRO Precautions

### MDRO Precautions

- Use **Standard Precautions** plus **Contact Precautions** or **Contact/GI Precautions** for known or suspected cases.
- Private room or partnered with another patient who is infected with the same resistant organism.
- Use dedicated equipment or single use items if possible.
- Disinfect items before using them with another patient.
- **Special Precautions for VRE**
  - Isolation precautions only required if patient has an open draining wound, diarrhea, or are incontinent of urine or stool.



## 1.28 MDRO Precautions

L E H I G H V A L L E Y H E A L T H N E T W O R K

### MDRO Precautions

**Wear gloves:**

- For **ALL** patient contact
- When you will come in contact with surfaces in the patient's room

Remove your gloves and perform hand hygiene when you exit the patient's room.





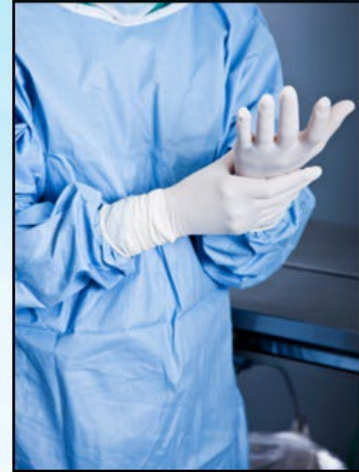
## 1.29 MDRO Precautions

L E H I G H V A L L E Y H E A L T H N E T W O R K

### MDRO Precautions

#### **Wear a gown when:**

- There is a chance your clothing will become contaminated through contact with the patient or the patient's environment.
- You will come in contact with a patient's wound or other drainage containing a MDRO.



### 1.30 MDRO Precautions

L E H I G H V A L L E Y H E A L T H N E T W O R K

## MDRO Precautions

Carefully **clean the patient's room and medical equipment** with a hospital approved disinfectant solution.

Frequently touched surfaces should be cleaned more often.

- For patients with *C. Diff*, clean medical equipment and the patient room with hospital approved bleach solution.
- When available, use ultraviolet light disinfection machine "Tru-D"

### ***1.31 Catheter Associated***

L E H I G H V A L L E Y H E A L T H N E T W O R K

## **Catheter Associated Urinary Tract Infection (CAUTI)**

**A Catheter Associated Urinary Tract Infection (CAUTI) is:**

- A urinary tract infection contracted from the use of an indwelling urinary catheter.

**Key elements of CAUTI Prevention:**

- Use urinary catheters only when necessary
- Consider alternatives to urinary catheterization
- Aseptic technique during catheter insertion
- Remove when no longer needed
- Monitor for signs of infection
- Where applicable, utilize nurse managed urinary catheter removal protocol
- Educate the patient and family on ways to prevent infection.

### **1.32 Catheter Associated**

## **Daily Care of the Catheter**

- Wear gloves during care and manipulation of the catheter or tubing
- Perform perineal care daily and as needed
- Clean catheter and tubing with CHG wipes daily and after every BM
- Ensure no kinks or dependent loops
- Keep tamper evident seal (TES) intact
- Keep bag below level of bladder at all times
- Use securement device
- Empty bag every shift and prior to transports

### ***1.33 Antimicrobial Stewardship***

L E H I G H V A L L E Y H E A L T H N E T W O R K

## **Antimicrobial Stewardship**





### 1.34 Antimicrobial Stewardship

L E H I G H V A L L E Y H E A L T H N E T W O R K

## Antimicrobial Stewardship

### What is Antimicrobial Stewardship?

- Stewardship is the careful and responsible management of something entrusted to one's care, i.e., *stewardship* of natural resources.
- Antibiotics are a resource that has been entrusted to our care as healthcare providers.
- The Antimicrobial Stewardship Program at LVHN seeks to optimize the use of these valuable medications in both the inpatient and outpatient setting.

## 1.35 Antibiotics

L E H I G H V A L L E Y H E A L T H N E T W O R K

### Antibiotics

#### Why it is important to Be Antibiotics Aware?

- Antibiotics are important medications that are often necessary to treat serious infections.
- Improper use of antibiotics may lead to side effects, increased cost, and decreased usefulness of these important drugs.

### Viruses or Bacteria What's got you sick?

Antibiotics are only needed for treating certain infections caused by bacteria. Viral illnesses cannot be treated with antibiotics. When an antibiotic is not prescribed, ask your healthcare professional for tips on how to relieve symptoms and feel better.

Common Condition	Common Cause			Are Antibiotics Needed?
	Bacteria	Bacteria or Virus	Virus	
Strep throat	✓			Yes
Whooping cough	✓			Yes
Urinary tract infection	✓			Yes
Sinus infection		✓		Maybe
Middle ear infection		✓		Maybe
Bronchitis/chest cold (in otherwise healthy children and adults)*		✓		No*
Common cold/runny nose			✓	No
Sore throat (except strep)			✓	No
Flu			✓	No

\* Studies show that in otherwise healthy children and adults, antibiotics for bronchitis won't help you feel better.



To learn more about antibiotic prescribing and use, visit [www.cdc.gov/antibiotic-use](http://www.cdc.gov/antibiotic-use).



### 1.36 Consequences of Antibiotics

L E H I G H V A L L E Y H E A L T H N E T W O R K

## Consequences of Antibiotics

What are some consequences of antibiotic use?

- Adverse effects:
  - Allergic reaction
  - Organ damage
  - Side effects
- Resistant bacteria
- *Clostridioides difficile* infection
- Cost
- Even when antibiotics are used correctly these adverse consequences may occur.



### 1.39 Other Colleague Stewardship Role

L E H I G H V A L L E Y H E A L T H N E T W O R K

## Other Colleague Stewardship Role

- Don't insist on antibiotics when your healthcare provider doesn't feel that they will help.
- Don't tell patients that their doctor should prescribe an antibiotic.
- Perform hand hygiene before and after patient contact to prevent the spread of resistant bacteria.

Select **Prev** to review another role

### 1.43 Objectives Review

L E H I G H V A L L E Y H E A L T H N E T W O R K

## Objectives Review

### You should be able to:

- Identify strategies that can reduce the risk of developing a surgical site infection.
- Discuss key facts about specific multi-drug resistant organisms in the healthcare setting.
- Explain methodologies that can help decrease the likelihood of developing a Catheter Associated Urinary Tract Infection.
- Describe the Antimicrobial Stewardship program at LVHN.