



Lucile Packard Children's Hospital
STANFORD UNIVERSITY MEDICAL CENTER

Prevention of Hospital Acquired Infections

National Patient Safety Goal #7



Hospital Acquired Infections

Course Objectives

At the end of this course the learner should be able to:

- Recognize 3 basic principles of infection prevention
- Define Multi-Drug Resistant Organisms (**MDRO**)
- Identify 2 MDRO's seen at the hospital
- Describe which patients require MRSA screening within 24 hours of admission to the hospital
- Describe the 5 elements of the Central Line Associated Bloodstream Infection Prevention Bundle
- Recognize 2 methods to prevent Surgical Site Infections
- Describe 3 prevention measures of the VAP bundle
- Describe 3 prevention measures of the CAUTI bundle
- Identify where you can find infection prevention information, policies and procedures



Hospital Acquired Infections

Remember



- The "**Check Your Knowledge**" questions are **NOT** scored; go ahead and guess.
- The **Post Test** is scored and a final grade given.

100% is needed to pass the *Prevention of Hospital Acquired Infections: National Patient Safety Goal #7* module.



Hospital Acquired Infections

Check Your Knowledge



True or False: The prevention of hospital acquired infections is a key *National Patient Safety Goal*.

True

~~False~~

Incorrect, prevention of hospital acquired infections is the #7 *National Patient Safety Goal*.

[Close window](#)



Hospital Acquired Infections

Infection Prevention

Click on each of the boxes to find 4 ways to prevent the spread of infections:



Hand Hygiene is the **si** spread of germs.

- Use alcohol gel or or contact with the



Use Standard Precaut

- Perform hand hyg
- Use the correct *pe gown, mask, and* blood or body fluid



Respiratory Etiquette/

- *Cover that cough-* to transport
- Teach patients/pa
- Have tissues avail

Note: Symtomatic



Clean the environmen

Remember: for healthc allowed in the patient ca

Eat in designated areas are not allowed.



Infection Prevention

Click on each of the boxes to find 4 ways to prevent the spread of infections:

Hand Hygiene is the **single most important** method to prevent the spread of germs.

- Use alcohol gel or soap and water before and after patient contact or contact with the patient's environment

Use Standard Precautions for all patient care:

- Perform hand hygiene (wash hands)
- Use the correct *personal protective equipment (PPE)* - *gloves, gown, mask, and face shield*- based on the potential exposure to blood or body fluids and have *tissues* and *hand sanitizer* available

Respiratory Etiquette/Hygiene for all:

- *Cover that cough*- place a surgical mask on coughing patients *prior* to transport
- Teach patients/parents/visitors to *cover their cough*
- Have tissues available and hand sanitizer

Note: Symptomatic visitors/staff are **not allowed** in the inpatient units.

Clean the environment using a hospital-approved disinfectant.

Remember: for healthcare worker safety, eating and drinking is not allowed in the patient care areas.

Eat in designated areas e.g., lounge, where patients and their specimens are not allowed.



Hospital Acquired Infections

Prevention of Central Line Associated Blood Stream Infections (CLABSI)



The use of the Central Line Bundle has shown to decrease the incidence of CLABSI.

The *central line bundle* is a group of evidence-based practices which have been shown to decrease central line associated blood stream infections when all elements are performed.

The following actions are included in the bundle and are required:

- follow hand hygiene protocols before central line insertion, whenever accessing the line, or performing dressing changes

Central Line Insertion

- use maximum barrier precautions (large drape, gown, mask, gloves, cap)
- use 2% chlorhexidine solution for skin antiseptis
- select optimal site for the catheter

Charting

- do daily review and documentation of the *need for the line*, with prompt removal if line if it is not needed



Hospital Acquired Infections

Ventilator Associated Pneumonia (VAP) Bundle



There are 7 key parts to the VAP bundle.

1. **Elevate head of bed**, per physician (MD) / neonatal nurse practitioner (NNP) order, to reduce risk of aspiration of gastric contents (*unless contraindicated*)
 1. *Pediatrics* (children > 1 year) elevate >30-45 degrees
 2. *Infants* > 15-30 degrees
2. **Daily evaluation** of sedation titration and extubation readiness to be documented by the physician/NP/PA
3. **Peptic ulcer disease prophylaxis** as ordered by the physician/NP/PA
4. **Oral hygiene** as per unit standards of care program every 4 hours and prn
5. **Strict infection control measures:** hand hygiene, gloves and other personal protective equipment (PPE)



Hospital Acquired Infections

VAP Bundle Continued



6. **Appropriate ventilator and endotracheal tube care** including:
 1. Inline suctioning
 2. Heated wire ventilator circuits to decrease condensation
 3. Assess condensation every 4 hours, prn and prior to repositioning
 4. Decrease number of ventilator disconnects
 5. There are separate suction tube/canister apparatus for oral care and endotracheal tube

7. **Deep vein thrombosis (DVT) prophylaxis**, as appropriate for the age and condition of the child



Hospital Acquired Infections

Catheter Associated UTI (CAUTI) Bundle



The CAUTI bundle has 7 key steps. They include:

1. **Assess the need for catheterization**- use indwelling catheters only when medically necessary
 - For operative patients, *remove catheter as soon as possible*, preferably within 24 hours
2. **Use aseptic insertion technique** with appropriate hand hygiene, sterile gloves and use of sterile equipment
 - Use a foley catheter insertion tray
 - Perform hand hygiene with antimicrobial solution e.g., alcohol hand rub or chlorhexidine hand wash, immediately before and after insertion or any manipulation of the catheter or site
3. **Properly secure catheters after insertion** to prevent movement and urethral traction
4. **Continuously maintain a sterile closed drainage system.** *Do not* disconnect the catheter and drainage system unless there is an MD order to have the catheter irrigated



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Catheter Associated UTI (CAUTI) Bundle Continued



5. **Avoid prolonged catheterization of patient**- assess the need for an indwelling catheter on a daily basis
 - Research shows that patients are at a much higher risk of a CAUTI when a foley catheter remains in place longer than 6 days
6. **Keep good hygiene at the catheter**- urethral interface by providing routine perineal care
7. **Keep drainage bag *below* level of bladder at all times**
 - Reflux (*urine going back into the bladder*) of urine is linked to infection, so drainage bags should be positioned low to prevent backflow



Hospital Acquired Infections

Check Your Knowledge



True or False: Limiting number of staff in an operating room and keeping the door closed are 2 *preoperative* ways to reduce surgical site infections (SSI).

X True

Incorrect, limiting number of staff in the room and keeping the operating room door closed are 2 *INTRAoperative* ways to reduce surgical site infections (SSI).

False

[Close window](#)



Hospital Acquired Infections

Prevention of Surgical Site Infections (SSI)



Prevention of SSI is another important goal.

Infection prevention begins in the *preoperative* period, during surgery or *intraoperative* period and following surgery, the *postoperative* period.

The following evidence-based practices have been shown to decrease SSI's *preoperatively*:

- Control blood glucose during the perioperative period i.e., before, during and after surgery
- Use the correct prophylactic antibiotics within 1 hour of "cut time"
- Use clippers instead of razors if hair removal is needed
- Make sure that patients bathe or shower using an antimicrobial agent e.g., chlorhexidine gluconate (CHG), the night before or morning of surgery. **Exception:** premature infants.
- Use only hospital-approved antiseptic agent for skin preparation



Hospital Acquired Infections

Prevention of Surgical Site Infections (SSI) cont.



Intraoperatively

- ***Control traffic***– limit number of personnel in room and keep door closed

Postoperatively

- ***Protect a closed incision*** for 24-48 postoperatively with a *sterile dressing*
- ***Wear gloves for dressing changes***- sterile gloves required for certain patient populations e.g., CV surgery, immunocompromised patients.
- ***Wash hand*** before and after dressing changes, and any contact with the surgical site



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Hospital Acquired Infections

Multi-Drug Resistant Organisms (MDRO's)



Over time, germs can grow stronger than the medicines used to fight them.

- Germs are called MDRO when they become resistant (*not killed by*) many of the antibiotics (*drugs*) usually used to treatment them
- Examples of MDRO's include:
 - Methicillin Resistant Staph Aureus - ***MRSA***
 - Vancomycin Resistant Enterococcus - ***VRE***
 - Clostridium difficile – ***C. diff***



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MRSA



Since January 1, 2009, California law requires certain patients be screened for MRSA *within 24 hours* of admission to the hospital.

They include patients:

- discharged from another acute care facility within the past 30 days
- admitted to an ICU
- get inpatient dialysis
- transferred from a skilled nursing facility

Patients and their families are told about positive test results by a doctor.

The patient's nurse will give educational information about MRSA, and how to prevent giving it to others, to the patient and family.

Chart in the medical records that the patient and family were told about the MRSA status and that education was done.



Isolation Signs

Contact Precautions are used to reduce the transmission of MDRO's. **Click** on the pictures to learn more about contact precautions and the isolation signs used to tell you the patient is infected.

The **Contact Precaution sign** is used for general contact precautions.

When you enter the room remember **4** key things:

1. **Hand Hygiene:** Wash hands with antimicrobial soap or sanitize hands with alcohol gel for *15 seconds* before patient contact, after glove removal and **before** leaving the patient's room.
2. **Gloves:** Wear gloves when entering room. *Change gloves* after contact with infective material. *Remove gloves before* leaving the patient's room.
3. **Gown:** Wear a gown if you anticipate that your clothes will have contact with the patient, environmental surfaces or items in the patient's room. Remove the gown **before** leaving the patient's environment.
4. **Equipment:** When possible, dedicate the use of noncritical patient care equipment to this patient. *Disinfect all patient care equipment before* removing it from patient's room.

The blue "**Bubbles and Bleach**" sign is for *C. diff* and to let everyone know to use the **bleach protocol and handwashing** instead of alcohol gel for hand hygiene.

In addition to the regular Contact Precautions:

- You **must** wear **gown** and **gloves upon entry** into the room
- Keep dedicated equipment and hamper *in the room*
- Put patient in a private room
- When discharged or transferred, housekeeping to clean room per procedure and replace curtains
- Bubbles and Bleach sign can be wiped off and reused



Hospital Acquired Infections

Wearing a Portable Air-Purifying Respirator (PAPR)



A properly fitting PAPR must be worn by personnel performing the following high-risk medical procedures on *suspected or confirmed aerosol transmissible disease (ATD) that requires Airborne Isolation:*

- Sputum induction
- Bronchoscopy
- Tissue handling procedures such as specimen processing and autopsy
- Autopsy, clinical, surgical, and lab procedures that may aerosolize pathogens
- Respiratory care procedures such as intubation, open suction, and tracheostomy suctioning
- Pulmonary function tests

Contact Risk Management for PAPR training.



Hospital Acquired Infections

Putting on Personal Protective Equipment (PPE)

The following animation covers the **5 steps** for putting on PPE when going into a room with an isolation patient. **Note:** The animation will loop 2 times.

Step 1

Hand hygiene

Use either soap & water for 15 seconds or alcohol degermer until dry.





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Hospital Acquired Infections

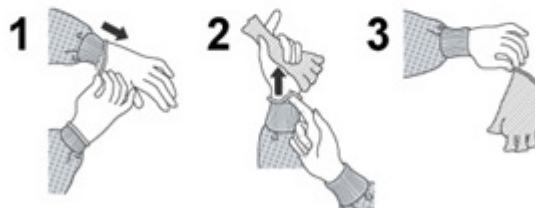
Removing Your Personal Protective Equipment (PPE)

The following animation covers the **5 steps** for taking off your PPE when leaving an isolation patient's room. **Note:** The animation will loop 2 times.

Step 1

Remove gloves.

Peel off one glove. Hold it in the other gloved hand. Peel off second glove over both gloves.





Hospital Acquired Infections

Preventing Infection Program



Preventing Infection brochure in the admission packets

The **Preventing Infection** brochure provides the patient and/or family with information about steps they can take to control infection:

- hand hygiene practices
- respiratory hygiene practices
- contact precautions according to the patient's condition

The information needs to be covered with the patient and family on the day patient enters the hospital, or as soon as possible (within 24 – 48 hours).

You need to check the patient's understanding of this information.

Chart in the medical record all patient/parent/family education sessions and how well they understood the information.

In addition to the brochure, additional educational materials are available on the Infection Control website.



Hospital Acquired Infections

Infection Control Website

The screenshot shows a web browser window displaying the Lucile Packard Children's Hospital Intranet. The page title is "Infection Prevention and Control Policies and Procedures". The navigation menu includes: Clinical Transformation Program, Departments and Projects, News and Publications, Inside LUCH, Human Resources, Education and Training, and Forms, Policies and References. The main content area is titled "Infection Prevention and Control Policies and Procedures" and contains a list of links to various policies and procedures, such as Bloodborne Pathogen Exposure Control Plan, Breast Milk Exposure, and Hand Hygiene.

The Infection Control website provides the staff with current information on many topics

Some of the topics covered include:

- policies and procedures
- hand hygiene
- preventing surgical site and catheter-associated infections
- resources
- news items



Hospital Acquired Infections

Summary



Let's review

- The basic principles of infection prevention are:
 - Perform hand hygiene in accordance with hospital procedure
 - Practice Standard Precautions with all patients
 - Add additional precautions e.g., Contact Isolation for MDROs and *C. difficile*
 - Teach/practice cough etiquette and ensure that respiratory hygiene is practiced e.g., mask coughing patients during transport
 - Maintain a clean and disinfected environment
- Germs are called multidrug resistant when they are resistant to antibiotics and include MRSA, VRE, and *C. difficile*
- Use infection prevention bundles to reduce the risk of CABSIs, SSI, BAP and CAUTI
- *California Code of Regulations* requires health care workers to wear a **Portable Air-Purifying Respirator** (PAPR) when doing any highly hazardous or clinical procedure that may aerosolize pathogens from a patient with aerosol transmissible diseases
- The ***Preventing Infection*** brochure provides the patient and/or family with information about infection control measures
- For information about isolation and precautions, the ***Infection Control Manual*** is available on Micromedex, Skylight, in letters

TEST STRUCTURE REPORT
Stanford Univ Medical Center

Post Test

Test Override Owner: Stanford Univ Medical Center
 Course: LPCH Prevention of Hospital Acquired Infection Clinical Version: 1
 Report Date: 3/30/2011

Test Name: Post Test

Last Updated: 8/24/2010

Passing Score: 100

Question Groups: 1

Total Questions: 12

Test Settings

Presentation Mode:	SinglePage
Maximum Attempts:	3
Shuffle Questions:	Yes
Shuffle Distractor:	No
Notify Admin After:	No Notification
Allow Test Printing:	NeverPrint
Allow Bookmarking:	No
Time Limit (minutes):	0
Show Feedback:	AllQuestions
Introduction:	

Question Group: 09 questions

Description:

Questions: 12

Questions Count in Test: 12

1. central line

MultipleChoice

Custom Identifier:none

Extended Feedback:No

Which of the following includes all elements of the central line bundle?

- a. Hand hygiene, contact precautions, 2% chlorhexidine for skin antiseptis, appropriate site selection, documentation of daily necessity.
- b. Hand hygiene, maximal sterile barrier precautions, 2% chlorhexidine for skin antiseptis, appropriate site selection, documentation of daily necessity.
- c. Hand hygiene, maximal sterile barrier precautions, 2% chlorhexidine for skin antiseptis, appropriate site selection, change central line weekly.
- d. Hand hygiene, maximal sterile barrier precautions, culture tip when line discontinued, appropriate site selection, documentation of daily necessity.

2. hair removal

TrueFalse

Custom Identifier:none

Extended Feedback:No

If hair must be removed before surgery, use clippers only.

True

Clipping is the correct method to remove hair because it does not cause microabrasions.

Clipping is the correct method to remove hair because it

False	does not cause microabrasions.
<p>3. hand hygiene before</p> <p>Custom Identifier:none</p> <p>Use hand hygiene before and after dressing changes and any contact with the surgical site.</p> <p>✓ True</p> <p>False</p>	<p>TrueFalse</p> <p>Extended Feedback:No</p> <p>Hand hygiene prevents the spread of infection.</p> <p>Hand hygiene prevents the spread of infection.</p>
<p>4. examples of MDROs</p> <p>Custom Identifier:none</p> <p>The following are examples of MDRO's:</p> <p>a. MRSA</p> <p>b. VRE</p> <p>c. C. difficile</p> <p>✓ d. All of the above.</p> <p>e. A and B</p>	<p>MultipleChoice</p> <p>Extended Feedback:No</p> <p>All of these organisms are MDRO's.</p>
<p>5. prevnet HAI - except</p> <p>Custom Identifier:none</p> <p>The following are basic strategies to prevent hospital acquired infections throughout the hospital EXCEPT:</p> <p>a. Hand hygiene</p> <p>b. Respiratory Etiquette/Hygiene</p> <p>✓ c. Wear scrub attire when caring for patients</p> <p>d. A clean environment</p>	<p>MultipleChoice</p> <p>Extended Feedback:No</p> <p>Wearing scrub attire strategy is <i>not</i> a basic infection control strategy.</p>
<p>6. require hand washing</p> <p>Custom Identifier:none</p> <p>Which of the following would require hand hygiene?</p> <p>a. Before touching a patient</p> <p>b. After emptying a bedpan</p> <p>c. Before inspecting an IV dressing</p> <p>d. After leaving a patient's room</p> <p>✓ e. All of the above</p>	<p>MultipleChoice</p> <p>Extended Feedback:No</p> <p>All of these actions require hand hygiene.</p>
<p>7. etoh gel or soap</p> <p>Custom Identifier:none</p> <p>Hand hygiene includes alcohol gel or soap and water.</p> <p>✓ True</p> <p>False</p>	<p>TrueFalse</p> <p>Extended Feedback:No</p> <p>Both are acceptable methods of hand hygiene.</p> <p>Both are acceptable methods of hand hygiene.</p>
<p>8. manual location</p> <p>Custom Identifier:none</p> <p>Infection Prevention and Control policies, procedures and other information can be found on the Infection Control website on the LPCH intranet.</p> <p>✓ True</p> <p>False</p>	<p>TrueFalse</p> <p>Extended Feedback:No</p> <p>The most current and up to date is available on the intranet.</p> <p>The most current and up to date is available on the intranet.</p>
<p>9. dedicated equip</p> <p>Custom Identifier:none</p> <p>Dedicated patient care equipment is only required for patients with VRE.</p>	<p>TrueFalse</p> <p>Extended Feedback:No</p>

<p>True</p> <p>✓ False</p>	<p>Dedicated patient care equipment is required for all MDRO's.</p> <p>Dedicated patient care equipment is required for all MDRO's.</p>
<p>10. bubbles sign</p> <p>Custom Identifier:none</p> <p>A Bubbles and Bleach sign is used for patients with <i>C. difficile</i>.</p> <p>✓ True</p> <p>False</p>	<p>TrueFalse</p> <p>Extended Feedback:No</p> <p>The Bubbles and Bleach sign is used to alert staff to use bleach protocol for <i>C.difficile</i> patients.</p> <p>The Bubbles and Bleach sign is used to alert staff to use bleach protocol for <i>C.difficile</i> patients.</p>
<p>11. contact precautions</p> <p>Custom Identifier:none</p> <p>Contact Precautions include the following:</p> <p>a. Gown</p> <p>b. Gloves</p> <p>c. Booties</p> <p>d. All of the above</p> <p>✓ e. A and B only</p>	<p>MultipleChoice</p> <p>Extended Feedback:No</p> <p>Booties are not part of Contact Precautions.</p>
<p>12. standard precautions</p> <p>Custom Identifier:none</p> <p>Standard precautions are used <i>only</i> for patients with MDRO's.</p> <p>True</p> <p>✓ False</p>	<p>TrueFalse</p> <p>Extended Feedback:No</p> <p>Standard precautions are used for all patients.</p> <p>Standard precautions are used for all patients.</p>



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