HealthStream Regulatory Script

Rapid Regulatory Compliance: Clinical: Part II:

Version: September 2006

Lesson 1: Introduction
Lesson 2: Safety
Lesson 2: Emergency Preparedness
Lesson 3: Infection Control
Welcome to Rapid Regulatory Compliance: Clinical: Part II.

This course has been designed to rapidly review and update your knowledge of the following topics:
- Safety
- Emergency preparedness
- Infection control

Note: This course provides essential information for veteran clinical healthcare staff. If you are new to any of the topics presented here, consider taking the full-length course on that topic.

As your partner, HealthStream strives to provide its customers with excellence in regulatory learning solutions. As new guidelines are continually issued by regulatory agencies, we work to update courses, as needed, in a timely manner. Since responsibility for complying with new guidelines remains with your organization, HealthStream encourages you to routinely check all relevant regulatory agencies directly for the latest updates for clinical/organizational guidelines.

If you have concerns about any aspect of the safety or quality of patient care in your organization, be aware that you may report these concerns directly to JCAHO.
Welcome to the lesson on safety.

This lesson covers:
- General safety
- Fire safety
- Electrical safety
- Radiation safety
- MRI safety
- Ergonomics
- Back safety
- Lifting and transporting patients
- Slips, trips, and falls
- Latex allergy
- Hazard communication
- Security and workplace violence
- Reporting incidents

FLASH ANIMATION: 2001.SWF/FLA
Healthcare facilities have many potential hazards. OSHA[glossary] separates these hazards into five general categories:

- Biological
- Chemical
- Psychological
- Physical
- Environmental / mechanical

As shown in the table on the next screen, take appropriate measures to:

- Eliminate as many of these hazards as possible.
- Safeguard against exposure to the hazards that cannot be eliminated.

Note: Many of the hazards mentioned in the table are addressed in greater detail later in the lesson or the course.
### General Safety: Hazards and Safeguards

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Definition</th>
<th>Examples</th>
<th>Safeguards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological</td>
<td>Pathogens</td>
<td>HIV, VRE, MRSA, HBV, HCV, TB</td>
<td>Infection-control measures</td>
</tr>
<tr>
<td>Chemical</td>
<td>Toxic or irritating materials</td>
<td>Detergents, solvents, disinfectants, sterilizing agents, waste anesthetic gases, hazardous drugs, mercury</td>
<td>Engineering controls, work-practice controls, appropriate personal protective equipment (PPE)</td>
</tr>
<tr>
<td>Psychological</td>
<td>Factors that create or increase emotional stress or strain</td>
<td>Working with terminally ill patients, patient deaths, overwork, understaffing, tight schedules, equipment malfunctions</td>
<td>Stress management, relaxation exercises, meditation</td>
</tr>
<tr>
<td>Physical</td>
<td>Agents with the ability to cause physical harm</td>
<td>Radiation, lasers, noise, electricity and electrical equipment, extreme temperatures</td>
<td>Various, depending on the hazard</td>
</tr>
<tr>
<td>Environmental &amp; mechanical</td>
<td>Factors that cause or increase the risk of accident, injury, strain, or discomfort</td>
<td>Lifting and moving patients, tripping hazards, poor air quality, slippery floors, cluttered or obstructed work areas or passageways</td>
<td>Maintenance of a safe work environment, prompt reporting of hazardous conditions</td>
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</table>
Prevention is the best defense against fire.

To help prevent fires related to the common cause of smoking:
- Follow your facility’s smoking policy.
- Smoke only in designated areas.
- Instruct visitors and authorized patients to smoke only in designated areas.

To help prevent fires related to the common cause of electrical malfunction:
- Remove damaged or faulty equipment from service.
- Submit malfunctioning equipment for repair.

To help prevent fires related to the common cause of equipment misuse:
- Do not use any piece of equipment that you have not been trained to use.
Not all fires can be prevented. Therefore, your facility is equipped with fire safety features. These features include:

- Fire alarm systems
- Fire extinguishers
- Emergency exit routes and doors
- Smoke and fire doors and partitions
- A fire plan

Be familiar with the location, use, and operation of each of these features.
When in doubt, respond to fires using the RACE protocol:
- **R**: Rescue
- **A**: Alarm
- **C**: Confine
- **E**: Extinguish or evacuate

Click on each item for a brief review.

**CLICK TO REVEAL**

**R**: Rescue
Rescue all patients from the immediate area of the fire.

**A**: Alarm.
Initiate the alarm by:
- Calling out for help,
- Activating a manual pull station, and/or
- Phoning the fire department.

**C**: Confine
Confine the fire by closing the door to the room where the fire started.

**E**: Extinguish or evacuate
If the fire is small enough to put out with a single portable extinguisher, attempt to extinguish. Use the PASS protocol:
- Pull the pin.
- Aim the nozzle.
- Squeeze the trigger.
- Sweep back and forth across the base of the fire.

Otherwise, prepare to evacuate patients to an unaffected smoke / fire compartment.
Most equipment in the healthcare setting is electric.

This means there is risk of electric shock from medical equipment.

Electric shock can cause:
- Burns
- Muscle spasms
- Ventricular fibrillation [glossary]
- Respiratory arrest
- Death
To help prevent electrical accidents in your facility:

- **Remove and report electrical hazards.**
- **Use electrical equipment properly.**
- **Maintain, test, and inspect equipment regularly.**

Click on each of these for a brief review of key points.

<table>
<thead>
<tr>
<th>CLICK TO REVEAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remove and report hazards</strong></td>
</tr>
<tr>
<td>Remove electrical equipment from service if it:</td>
</tr>
<tr>
<td>• Malfunctions</td>
</tr>
<tr>
<td>• Shows signs of damage</td>
</tr>
<tr>
<td>• Shows signs of unusual heating</td>
</tr>
<tr>
<td>• Produces a burning smell during operation</td>
</tr>
<tr>
<td>• Shocks staff or patients</td>
</tr>
<tr>
<td>Report the hazard according to facility protocol. Submit the equipment for repair.</td>
</tr>
</tbody>
</table>

| **Use equipment safely** |
| Learn proper equipment operation before use. |
| Do not use damaged equipment. |
| Do not use equipment on which liquid has been spilled. |
| Do not operate electrical equipment with wet hands or when standing in water. |
| Do not stack anything on or behind electrical equipment. |
| Turn equipment off before plugging in or unplugging. |

| **Maintain, test, and inspect** |
| All medical equipment should be inspected and tested on a regular schedule. |
Other best practices for preventing electrical accidents in your facility are:

- **Use power cords and outlets properly.**
- **Use circuits safely.**
- **Protect patients from electrical shock.**

Click on each of these for a brief review of key points.

### CLICK TO REVEAL

#### Use cords and outlets properly
- Do not use outlets or cords with exposed wiring.
- Report damaged outlets or cords.
- A hot outlet can be an indication of unsafe wiring. Unplug cords from the outlet. Report the hazard.
- Do not bend, stretch, or kink power cords excessively.
- Do not jerk cords from outlets. Pull on the plug.
- Do not staple, tack, or nail power cords to walls or floors. Use tape, if necessary.
- Do not rest equipment on power cords.
- Use only power cords with three-prong plugs. Never use adapters, two-prong plugs, or broken three-prong plugs.

#### Use circuits safely
- Do not overload circuits.
- Label each circuit breaker clearly.
- Breaker boxes should be accessible at all times.

#### Protect patients
- Place electrical equipment at a distance from patients.
- Maintain patient areas, keeping floors dry at all times.
- Do not touch patients and electrical equipment at the same time.
Exposure to radiation can increase the risk of cancer. Therefore, it is important to protect against exposure.

The three key factors for limiting exposure are:
- Time. Minimize the amount of time that you are exposed.
- Distance. Maximize your distance from the radiation source.
- Shielding. Use appropriate shielding to absorb the energy of radioactive particles.

The goal is to keep your radiation exposure As Low As Reasonably Achievable (ALARA).
An MRI system is not an inherent biological hazard. However, hazards can arise when certain items enter the MRI system:

- **Ferromagnetic objects** are attracted to the core of the MRI magnet. This causes them to accelerate toward the core and become dangerous projectiles (the “projectile effect”).
- Implanted or embedded ferromagnetic objects (e.g., aneurysm clips) will try to align with the magnetic field. This can cause these objects to rip through soft tissues.
- **Pulsed radiofrequency fields** in the MRI system can produce electric currents in metal implants or monitoring cables. This can result in burns.
- Electronic devices (such as pacemakers) can malfunction.
MRI safety is largely a matter of ensuring that potentially hazardous items stay outside the MRI field.

Therefore:

- Control access to the magnetic field.
- Post signs outside the magnetic field, warning of the projectile effect and the danger of metallic implants.
- Remove metallic objects from clothing and pockets before entering the magnetic field.
- Thoroughly screen patients prior to MRI. Ensure that patients do not have MRI-unsafe implants or embedded objects.

In addition, patients should be positioned for MRI so that electrically conductive loops [glossary] are not formed. This will prevent burns.
The term “ergonomics” comes from two Greek words:

- *Ergon*, meaning work
- *Nomos*, meaning natural laws

Ergonomics means designing work equipment and tasks to fit the “natural laws” of the human body.

Good ergonomic practices can lead to fewer work-related injuries.
Ergonomic best practices are:
- Avoid fixed or awkward postures.
- Avoid lifting without using proper devices or equipment.
- Avoid highly repetitive tasks.
- Avoid forceful exertions.
- Provide support for your limbs.
- Use proper posture and body mechanics when sitting, standing, or lifting.
- Keep tools close to you, to avoid reaching, twisting, and bending.
- Use supportive equipment and ergonomic tools (e.g., wrist supports for keyboards).
- Respond promptly to aches and pains. This can help you address slight injuries before they become severe or debilitating.
Healthcare is a high-risk setting for back pain and injury. Healthcare workers who lift and move patients are at especially high risk for injury.

Injury may be prevented through:
- Proper care and operation of the spine
- Proper posture
- Regular exercise

On the following screens, let’s take a closer look at each of the above.
Back Safety: Proper Care and Operation of the Spine

Take proper care of the spine while:
- **Sleeping**
- **Standing**
- **Sitting**
- **Lifting a static load vertically**
- **Lifting or transferring a patient**

Click on each item for a brief review of key points

<table>
<thead>
<tr>
<th>CLICK TO REVEAL</th>
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</thead>
<tbody>
<tr>
<td><strong>Sleeping</strong></td>
</tr>
</tbody>
</table>
| - Sleeping on the back is best for back health.  
- Sleeping on the side is next best.  
- Sleeping on the stomach is least healthy for the back.|

<table>
<thead>
<tr>
<th><strong>Standing</strong></th>
</tr>
</thead>
</table>
| - Wear good comfortable shoes.  
- Stand up straight.  
- Keep the knees flexed.  
- Use a footrest, alternating feet every few minutes if you must stand for long periods of time.|

<table>
<thead>
<tr>
<th><strong>Sitting</strong></th>
</tr>
</thead>
</table>
| - Form 90-degree angles at the knees and the hips.  
- When the hands are on a desk or keyboard, also form 90-degree angles at the elbows. The wrists should be kept straight.|

<table>
<thead>
<tr>
<th><strong>Lifting a static load vertically</strong></th>
</tr>
</thead>
</table>
| - Bend at the hips and knees.  
- Keep the head up.  
- Maintain the three natural curves of the spine.  
- Hold the load close to the body.  
- Lift with the muscles of the legs.|

<table>
<thead>
<tr>
<th><strong>Lifting or transferring a patient</strong></th>
</tr>
</thead>
</table>
| - Avoid manual lifting.  
- Use motorized lifts or other assistive devices. |
To stand with proper posture, imagine a cord dropped through the center of your head to your feet.

If the spine is properly aligned, the cord should pass through the center of the body, in the right-to-left plane.

In the front-to-back plane of the body, the cord should pass through:
• The ear
• The front of the shoulder
• The center of the hip
• the area behind the kneecap
• The ankle.

To practice good posture, imagine the cord attached to the crown of your head. As the cord pulls up:
• It holds the head high.
• It pulls the three natural curves of the spine into alignment.
Regular exercise can help prevent back injury.

Exercise should include:
- **Aerobic exercise**
- **Stretching exercise**
- **Strengthening exercise**

Click on each for a brief review of key points.

Consult your physical therapist or physician to find out appropriate exercises for your back.

### Aerobic exercise
Do aerobic exercise at least three times a week. This contributes to overall fitness and increases blood flow to the spine.

### Stretching exercises
Stretches are gradual, gentle exercises that lengthen important muscles, increasing their ability to be put through the range of motion for which they are designed. Stretch seven days a week.

### Strengthening exercises
Strengthening exercises help build muscle mass and definition by forcing the muscles to work against weight or resistance. Do strengthening exercises four to five days a week.
Healthcare staff who lift and transfer patients are repeatedly exposed to the three major risk factors for injury during physical tasks:

- **Awkward posture**
- **Force**
- **Repetition**

Click on each factor for a brief review of key points.

**Awkward posture**
Manual patient handling often involves awkward postures. For example, bending and reaching while lifting or lowering creates an awkward posture.

**Force**
Force refers to how hard the muscles have to work. A lot of force is required to lift patients who typically weigh 100 pounds or more.

**Repetition**
This risk factor refers to performing the same motion or series of motions over and over again. Nurses and aides might perform dozens of lifts and transfers in a single shift. They might perform thousands of lifts over a lifetime of nursing.
Lifting and Transferring Patients

For years, nurses have been trained to use proper body mechanics and safe lifting techniques to protect against injury during manual patient handling.

However, many patient handling tasks are simply unsafe when performed manually.

In other words, nurses risk injury even if they use proper body mechanics.

Therefore, OSHA recommends that manual lifting should be minimized. If possible, it should be eliminated.
Lifting and Transferring Patients

To minimize or eliminate manual lifting, use devices to help with patient lifts and transfers.

Available devices include:
- Motorized lifts
- Non-motorized transfer devices such as gait belts, transfer boards, etc.

Before any lift or transfer, the patient should be assessed to determine how to do the transfer safely.

This includes determining:
- The appropriate method for the transfer
- The appropriate equipment to use
- How many staff members are needed
Slips, trips, and falls in the workplace cause injuries and deaths every year.

On the following screens, let’s look at tips for preventing:
- Slips
- Trips
- Falls
## Slips, Trips, and Falls: Preventing Slips

To help prevent slips:
- Keep floors clean and dry.
- Increase the friction of floors with abrasive coatings, non-skid strips, or rubber mats.
- Secure rugs with skid-resistant backing.
- Choose slip-resistant shoes. Look for:
  - Soft rubber soles
  - A large amount of surface area in contact with the floor (i.e., no high heels)
  - Patterned soles that increase friction
- Post safety signs around slip hazards (icy sidewalks, wet floors, etc.).
To help prevent trips:
- Keep floors clear and uncluttered.
- Repair uneven flooring, or post safety signs.
- Use proper lighting (not too bright and not too dim).
Slips, Trips, and Falls: Preventing Falls

<table>
<thead>
<tr>
<th>Danger zones for falls are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• <strong>Stairs</strong></td>
</tr>
<tr>
<td>• <strong>Ladders</strong></td>
</tr>
<tr>
<td>• <strong>Vehicles and equipment</strong></td>
</tr>
</tbody>
</table>

Click on each for strategies to prevent falls.

- **Stairs**
  - Keep staircases clean and well lit.
  - Staircases should have sturdy handrails on both sides. When using the stairs, keep one hand free to hold the handrail.

- **Ladders**
  - Use a ladder of the height you need.
  - Lock the spreader into position before climbing the ladder.
  - Climb straight up. Do not lean to either side.
  - Hold onto the side rails with both hands while climbing up or down.

- **Vehicles and equipment**
  - Keep steps clean and dry.
  - To board a vehicle, take a firm grip on a sturdy handle to pull up.
  - Step down backward to get off the vehicle.
When conditions are hazardous (icy sidewalks, wet floors), avoid slipping and falling by walking like a duck:

- Keep your feet flat and slightly spread apart.
- Point your toes slightly outward.
- Take slow, short steps. Keep your center of balance under you.
- Make wide turns at corners.
- Keep your arms at your sides. This gives additional balance. It also keeps your arms available for support if you fall.
Latex allergy is becoming more and more common. Most reactions to latex are mild. But some can be life-threatening.

Screening questions provide good tools for identifying patients at risk for latex allergy. This can help prevent future problems.

Review the questions in the table to the right.

If a patient answers “yes” to one or more of these questions, the patient may be at risk for latex allergy.

A careful and thorough medical history and physical exam should be performed.

For a more definitive diagnosis of latex allergy, tests that measure blood levels of anti-latex antibodies may be ordered.
Latex Allergy: Management

Anyone who is allergic to latex should avoid latex products.

To help protect a patient from exposure to latex in the healthcare setting:

- Clearly indicate "latex allergy" in the medical record.
- Do not use any latex products, including latex cleaning gloves, in the patient's room.
- Before entering the patient's room, remove latex gloves. Wash hands thoroughly with soap and water.
If you are allergic to latex:
- Inform your employer.
- Encourage your facility to provide as many latex-free products as possible.
- Use silk or plastic tape instead of adhesive tape.
- Use non-latex gloves only.
To protect workers from exposure to hazardous chemicals, the following groups of people have hazard communication duties:

- **Manufacturers**
- **Employers**
- **Employees**

Click on each for a review of key duties.

**Manufacturers**
Manufacturers of hazardous chemicals must:
- Research, create, and distribute a material safety data sheet (MSDS), which lists the specific hazards of the chemical.
- Label all containers of hazardous materials with the name of the product, appropriate hazard warnings, and the name and address of the manufacturer.

**Employers**
Employers whose employees work with hazardous chemicals must:
- Maintain a file of MSDS’s for all hazardous chemicals used by workers.
- Inspect incoming chemicals to verify proper labeling. If a chemical is transferred to an unlabeled container at the facility, the new container must be labeled appropriately.
- Train employees in the use of hazardous chemicals.

**Employees**
Employees who work with hazardous chemicals must:
- Know which hazardous chemicals are used in their work area.
- Know where MSDS’s are located on their unit.
- Know how to read an MSDS.
- Read all relevant MSDS’s before starting a job that may require the use of a hazardous chemical.
- Read product labels carefully. Follow all instructions. Heed all warnings.
- Attend all required hazardous chemical training sessions.
Workplace violence is any violence committed in a work setting.

To help keep your workplace safe from violence:
- **Recognize** aggressive behavior and warning signs of potential violence.
- **Respond** appropriately to the level of aggressive behavior (see graphic).
- **Report** all unsafe situations immediately.
Reporting Incidents

This lesson has focused on guidelines and best practices for ensuring staff and patient safety.

However, mistakes and problems can happen. A breach in safety is referred to as an incident.

Common examples of incidents have been mentioned in this lesson:

- Equipment malfunction
- Exposure to radiation
- MRI injury
- Latex allergic reaction
- Back injury
- Slip, trip, or fall
- Exposure to hazardous chemicals
- Workplace violence

All incidents should be reported immediately.

Check with your supervisor if you are not familiar with facility procedures for reporting incidents.
<table>
<thead>
<tr>
<th>Introduction</th>
</tr>
</thead>
</table>

Welcome to the lesson on emergency preparedness.

This lesson covers:
- Types of disaster events
- Emergency response plans
Types of Disaster Events

Healthcare organizations must be prepared to respond to disasters such as:
- Natural disasters
- Technological disasters
- Major transportation accidents
- Terrorism
- Nuclear, biological, and chemical events

To prepare, each facility must:
- Identify events that could occur internally or in the area.
- Determine the probability that each event will occur.
- Develop strategies for dealing with each event.
Emergency Response Plans

Facilities document their strategies for dealing with disaster in an Emergency Response Plan.

However, a written plan alone is not enough to ensure an effective response.

Staff must be:
- Educated on the procedures in the Plan.
- Trained and drilled to respond to disaster according to the Plan.

Make sure that YOU are ready to respond to disaster:
- Know the disaster events that pose a risk for your facility.
- Participate in all emergency response training and drills.
Lesson 4: Infection Control

Welcome to the lesson on infection control.

This lesson covers:
- Healthcare-associated infection (HAI)
- Hand hygiene
- Antibiotic resistance
- The Bloodborne Pathogens Standard
- Standard Precautions
- Transmission-Based Precautions
- Personal protective equipment
- Personal responsibility
Healthcare-Associated Infection: Impact

| Healthcare-associated infection (HAI) is an infection that develops after contact with the healthcare system. |
| HAI can be very costly, in terms of: |
| • Patient life and health |
| • Healthcare dollars |
HAI: Cause

HAI may be caused by bacteria, viruses, fungi, or parasites.

These infectious organisms may come from:
- Environmental sources (dust, etc.)
- Patients
- Staff members
- Hospital visitors

Depending on the agent, infection may be transmitted person-to-person via the:
- Contact route
- Droplet route
- Airborne route

Infection control for each of these modes of transmission will be discussed in greater detail later in the lesson.
Best practices for preventing HAI are related to:
- Hand hygiene
- Environmental hygiene
- Invasive procedures
- Antibiotic use
- Bloodborne pathogens
- Airborne Precautions
- Contact Precautions
- Droplet Precautions
- Personal protective equipment
- Personal responsibility

Let’s take a closer look at each.
Hand Hygiene: When and What

The single most important factor for preventing the spread of infection is proper hand hygiene.

Hands should be washed or decontaminated **before** and **after** each direct patient contact.

Current CDC guidelines recommend the use of:

- Soap and water for washing visibly soiled hands
- Alcohol-based hand rubs for routine decontamination of hands between patient contacts
Hand Hygiene: How

When washing with soap and water:
- Remove rings, jewelry, and watches.
- Pre-wet hands with water.
- Use an appropriate amount of soap.
- Rub all surfaces of the hands and wrists for 15 seconds.
- Rinse thoroughly under running water.
- Dry hands with a disposable towel.

When decontaminating hands with an alcohol rub:
- Remove jewelry.
- Apply the amount of rub recommended by the manufacturer.
- Rub all surfaces of the hands and wrists until hands are dry.
**Environmental Hygiene**

Environmental hygiene also can help prevent HAI

Best practices for environmental hygiene are:
- Maintain a visibly clean environment. There should be no visible dust or soiling.
- Clean, disinfect, or sterilize medical equipment after each use.
- Dispose safely of clinical waste.
- Launder used and infected linens safely and effectively.
- Follow appropriate guidelines for kitchen and food hygiene.
- Maintain an adequate pest-control program.

**FLASH ANIMATION: 4007.SWF/FLA**

![Infection Control:](Image)
Many HAI are related to invasive procedures, especially:
- Catheterization
- IV line placement

The most common type of HAI is urinary tract infection (UTI), associated with indwelling urinary catheters.

Therefore:
- High-risk procedures such as catheterization should be performed only when absolutely necessary.
- Catheters should be removed as soon as possible.
- Instruments and equipment used for invasive procedures should be properly sterilized before use. They should be used with aseptic technique.
Widespread use of antibiotics began in the 1940’s. Penicillin and other antibiotics were hailed as miracle drugs. They were able to cure previously untreatable bacterial illnesses.

However, bacteria are very adaptable. They have the ability to change genetically to resist the effects of antibiotics.

The more antibiotics are used, the more common resistant strains of bacteria become.

Clinically important examples are:
- Methicillin-resistant *Staphylococcus aureus* (MRSA)
- Vancomycin-resistant *Enterococci* (VRE)
- Drug-resistant *Streptococcus pneumoniae* (DRSP)
- Multidrug-resistant *Mycobacterium tuberculosis* (MDR-TB)
Antibiotic Use: Impact of Resistance

Antibiotic resistance is a significant health problem

It adversely affects:

- **Drug choice**
- **Patient health**
- **The healthcare system**

Click on each for a brief review of key points.

### CLICK TO REVEAL

#### Drug choice
When an infection is resistant to the antibiotic of choice, other antibiotics must be used instead. These second-choice drugs are typically:
- Less effective against the bacteria
- More toxic to the patient
- More expensive

#### Patient health
 Patients with resistant infections tend to have:
- Lengthier illness
- Higher medical bills
- Greater risk of death

#### The healthcare system
- Antibiotic-resistant strains contribute significantly to HAI.
- More than 70% of all bacteria that cause HAI are found to be resistant to one or more commonly used antibiotics.
Antibiotic Use: Prevention of Resistance

Healthcare professionals must take an active role in preventing the spread of antibiotic resistance.

Strategies include:
- Preventing infection
- Diagnosing and treating infection effectively
- Using antibiotics prudently
- Preventing spread of infection

Click on each strategy for a brief review of key points.

**Prevent infection**
One of the best techniques we have to prevent infection is vaccination.
- Patients should be kept up on appropriate vaccinations.
- Healthcare workers also should receive appropriate vaccinations.

**Diagnose and treat infection effectively**
- Effective diagnosis means identifying the cause of infection so that the right treatment may be given.
- Effective treatment includes using specific antibiotics when antibiotics are necessary. A specific antibiotic is targeted to the identified infectious agent. Use of broad-spectrum antibiotics or multiple antibiotics should be avoided.

**Use antibiotics prudently**
- An important part of using antibiotics prudently is NOT giving into patient demands for antibiotics for viral illnesses (colds, flu, etc.).
- Patients must be educated accordingly.

**Prevent spread of infection**
- Remember: The single best method for preventing spread of infection is hand hygiene. This makes proper hand hygiene an important tool in the fight against antibiotic resistance, as well.
- Appropriate Isolation Precautions (as discussed later in the lesson) should also be used to prevent spread of infection in the healthcare setting.
Bloodborne diseases are spread from person to person as a result of unprotected exposure to:
- Infected blood
- Other bodily fluids
- Non-intact skin
- Moist body tissues

Important bloodborne diseases include:
- AIDS
- Hepatitis B
- Hepatitis C
The Bloodborne Pathogens Standard helps protect workers from exposure to HIV and other bloodborne pathogens.

The Bloodborne Pathogens Standard:
- Covers any worker who might come in contact with blood or other potentially infectious materials (OPIM) as part of his or her job;
- Requires employers to take certain steps to help protect these workers;

One of the key parts of the Bloodborne Pathogens Standard is to require the use of Standard Precautions.
**Bloodborne Pathogens: Standard Precautions**

Standard Precautions should be used in the care of **all** patients, regardless of their diagnosis.

These Precautions apply to patient:
- Blood
- Body fluids
- Secretions and excretions (except sweat)
- Non-intact skin
- Mucous membranes

The major provisions of Standard Precautions are summarized in table form on the next screen.

Note: In the table, the term "bodily fluids" is used to indicate all patient fluids to which Standard Precautions apply (i.e., blood, body fluids, secretions, excretions).
## Bloodborne Pathogens: Standard Precautions

Standard Precautions are to be used in the care of all patients.

| Handwashing                  | Wash / decontaminate hands:  
|                              | • After touching bodily fluids or contaminated items  
|                              | • After removing gloves  
|                              | • Between patient contacts  |
| Gloves                       | • Wear gloves when touching bodily fluids or contaminated items.  
|                              | • Put on clean gloves before touching mucous membranes or non-intact skin.  
|                              | • Change gloves between “dirty” and “clean” tasks on the same patient.  
|                              | • Remove gloves promptly after use (before going to another patient). Wash hands immediately.  |
| Mask, Eye Protection, Face Shield, Gown |  
|                              | • Use personal protective equipment (PPE) as necessary to protect against splashes or sprays of bodily fluids.  |
| Patient-Care Equipment and Linens | • Equipment and linens soiled with bodily fluids should be handled in a way that avoids cross-contamination.  
|                              | • Clean and reprocess reusable equipment appropriately before use on another patient.  
|                              | • Discard single-use items appropriately.  |
| Environmental Control        | • Environmental surfaces should be cleaned and disinfected on a routine basis.  |
| Bloodborne Pathogens          | • Use sharps (needles, scalpels, etc.) carefully and appropriately. For example, do not bend or recap needles.  
|                              | • Take care to prevent accidental sticks.  |
| Patient Placement             | • Patients who contaminate the environment should be placed in private rooms.  |
Bloodborne Pathogens: Needlestick Prevention

The BPS has rules to protect against sharps injury:
- Facilities must adopt the use of safer needle devices.
- Contaminated needles and other contaminated sharps should not be bent or recapped.
- Shearing or breaking of contaminated needles is prohibited.
- Contaminated sharps should be placed in appropriate containers. These containers must be puncture-resistant, appropriately labeled or color-coded, and leak-proof on the sides and bottom.
Airborne Precautions: Background

Airborne diseases are transmitted from person to person via tiny particles.

These particles:
- Are produced when an infected person sneezes, coughs, or talks
- Can remain suspended in the air for long periods of time
- Can travel long distances on air currents

Transmission occurs when a healthy person inhales an infectious particle.

Infection and disease symptoms then may occur.
### Airborne Precautions: Diseases

<table>
<thead>
<tr>
<th>Important airborne (or potentially airborne) diseases include:</th>
<th>NO IMAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Chickenpox and shingles</td>
<td></td>
</tr>
<tr>
<td>• Measles</td>
<td></td>
</tr>
<tr>
<td>• Tuberculosis (TB)</td>
<td></td>
</tr>
<tr>
<td>• <strong>SARS</strong> [glossary]</td>
<td></td>
</tr>
<tr>
<td>• Smallpox</td>
<td></td>
</tr>
</tbody>
</table>

To prevent the transmission of airborne diseases in the healthcare setting, Airborne Precautions are used, as summarized briefly in the table on the next screen.
Airborne Precautions: Summary Table

Airborne Precautions are to be used, along with Standard Precautions, in the care of all patients with a diagnosed or suspected airborne-transmitted disease.

<table>
<thead>
<tr>
<th>Patient Placement</th>
<th>Patients on Airborne Precautions are isolated in private rooms with special air handling and ventilation systems. If a private room is not available, patients are <strong>coho</strong><a href="glossary">tored</a>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory Protection</td>
<td>Healthcare staff must wear personal respirators whenever they enter an airborne isolation room.</td>
</tr>
<tr>
<td>Patient Transport</td>
<td>Patient transport should be limited as much as possible.</td>
</tr>
</tbody>
</table>
### Airborne Precautions: Tuberculosis

<table>
<thead>
<tr>
<th>TB is an airborne disease.</th>
<th>NO IMAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Therefore, Airborne Precautions apply.</td>
<td></td>
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<tr>
<td>In addition, both the CDC and OSHA have specific guidelines for preventing transmission of TB in the healthcare setting.</td>
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<tr>
<td>Click on the following links to access more information:</td>
<td></td>
</tr>
<tr>
<td>• <strong>CDC Guidelines</strong> (link to CDCGuidelines.pdf)</td>
<td></td>
</tr>
<tr>
<td>• <strong>OSHA TB Enforcement Policy</strong> (link to OSHA_TB.pdf)</td>
<td></td>
</tr>
</tbody>
</table>
Contact transmission of disease occurs via direct or indirect person-to-person contact.

This form of transmission is the most important and common cause of HAI.
Examples of contact diseases are:

- Hepatitis A
- Respiratory syncytial virus infection
- Impetigo [glossary]
- Conjunctivitis [glossary]
- Viral hemorrhagic infections
- Many others

To prevent contact transmission of diseases in the healthcare setting, Contact Precautions are used, as shown in the table on the next screen.
Contact Precautions: Summary Table

<table>
<thead>
<tr>
<th>Patient Placement</th>
<th>Patients on Contact Precautions are isolated in private rooms or cohoorted.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloves, Gowns, and Hand Antisepsis</td>
<td>Healthcare staff must use gloves and gowns as necessary to prevent unprotected exposure to patients on Contact Precautions. Hands should be decontaminated immediately after removing gloves.</td>
</tr>
<tr>
<td>Patient Transport</td>
<td>Patient transport should be limited as much as possible.</td>
</tr>
<tr>
<td>Patient-Care Equipment</td>
<td>Non-critical equipment should be dedicated to a single patient or cohort on Contact Precautions. If this is not possible, equipment should be cleaned and disinfected between patients.</td>
</tr>
</tbody>
</table>
Droplet transmission happens via large respiratory droplets.

These droplets:
- Are generated during coughing, sneezing, talking, etc.
- Travel a short distance through the air (up to three feet).

Droplets may land on the mucous membranes of a nearby person's eyes, nose, or mouth.

Disease transmission then may occur.
Examples of droplet diseases are:
- Mumps
- Rubella
- Influenza
- Many others

To prevent the transmission of droplet diseases in the healthcare setting, Droplet Precautions are used, as shown in the table on the next screen.
Droplet Precautions: Recommendations

Droplet Precautions are to be used, along with Standard Precautions, in the care of all patients with a diagnosed or suspected droplet-transmitted disease.

<table>
<thead>
<tr>
<th>Patient Placement</th>
<th>Patients on Droplet Precautions should be isolated in private rooms or cohorted. If a private room is not available and cohorting is not possible, patients should be placed at least three feet away from the nearest other patient or visitor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masks</td>
<td>Healthcare staff should use masks whenever caring for or working within three feet of a patient on Droplet Precautions.</td>
</tr>
<tr>
<td>Patient Transport</td>
<td>Patient transport should be limited as much as possible.</td>
</tr>
</tbody>
</table>
**Personal Protective Equipment**

Personal protective equipment (PPE) is an important component of infection control.

PPE helps to prevent the spread of microorganisms both:
- From patient to healthcare worker
- From healthcare worker to patient

Review the screens describing Standard Precautions, Airborne Precautions, Contact Precautions, and Droplet Precautions for appropriate use of key items of PPE.

Note the use of:
- Gloves
- Masks
- Goggles
- Gowns
- Respirators
<table>
<thead>
<tr>
<th>Personal Responsibility</th>
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<tbody>
<tr>
<td>As a healthcare worker, you have personal responsibilities for infection control in your facility.</td>
</tr>
<tr>
<td>Maintain immunity to vaccine-preventable diseases such as:</td>
</tr>
<tr>
<td>• Hepatitis B</td>
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<tr>
<td>• Measles</td>
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<tr>
<td>• Varicella (chickenpox)</td>
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<tr>
<td>• Rubella</td>
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<tr>
<td>• Mumps</td>
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<tr>
<td>Report all unprotected exposures, such as accidental needlesticks.</td>
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<tr>
<td>Stay home from work when you are sick.</td>
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<td>Term</td>
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<td>--------------------</td>
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<tr>
<td><em>irritant contact dermatitis</em></td>
</tr>
<tr>
<td>SARS</td>
</tr>
<tr>
<td><em>impetigo</em></td>
</tr>
<tr>
<td><em>conjunctivitis</em></td>
</tr>
</tbody>
</table>
Final Exam

1. An example of a biological hazard is:
   a. Mercury
   b. Radiation
   c. Slippery floor
   d. Hepatitis B virus

Correct: Hepatitis B virus
Rationale: Biological hazards are pathogens, such as HBV.

2. The single best defense against fire is:
   a. Prevention
   b. Fire extinguishers
   c. Fire alarm systems
   d. Smoke and fire barriers

Correct: Prevention
Rationale: The best defense against fires is prevention.

3. In the RACE protocol for responding to a fire, “R” stands for:
   a. Resist
   b. Retreat
   c. Rescue
   d. Relocate

Correct: Rescue
Rationale: “R” stands for “rescue.” Rescue all patients from the immediate area of the fire.

4. The worst that can happen as a result of an electric shock is:
   a. Death
b. Being startled
c. Having muscles spasms
d. Feeling a tingling sensation

Correct: Death
Rationale: Electric shock can cause death.

5. Choose the true statement about electrical equipment and power cords.

   a. It is okay to use damaged equipment. However, you must report that it is damaged.
   b. It is okay to attach power cords to walls or floors. However, you must use tape, and not staples, tacks, or nails.
   c. It is okay to use electrical equipment when your hands are wet. However, you must be wearing rubber-soled shoes.
   d. It is okay to unplug equipment without turning it off. However, you must jerk the cord from the outlet, rather than touching the plug.

Correct: It is okay to attach power cords to walls or floors. However, you must use tape, and not staples, tacks, or nails.
Rationale: Do not staple, tack, or nail power cords to walls or floors. This could damage the cord covering and expose bare wires. Use tape, if necessary.

6. The three key factors for limiting exposure to radiation are:

   a. Time, distance, and shielding
   b. Globes, lab coat, and goggles
   c. Environmental hygiene, hand hygiene, and proper disposal
   d. None of the above

Correct answer: Time, distance, and shielding
Rationale: The three key factors for limiting your exposure to radiation are time, distance, and shielding.

7. Ferromagnetic objects can become dangerous projectiles when they:

   a. Interact with gamma rays.
   b. Are bombarded with beta particles.
   c. Encounter electromagnetic interference.
   d. Accelerate toward the center of an MRI system.

Correct: Accelerate toward the center of an MRI system.
Rationale: The “projectile effect” refers to ferromagnetic objects drawn at increasing speed toward the center of an MRI system.

8. “Ergonomics” means:
a. Designing work equipment and tasks to fit the “natural laws” of the human body  
b. Spread of infection according to the “natural laws” of human interactions and contact  
c. Fair distribution of healthcare resources according to the “natural laws” of medical ethics  
d. None of the above

Correct: Designing work equipment and tasks to fit the “natural laws” of the human body  
Rationale: This is an accurate definition of ergonomics.

9. To lift an object from the floor, lift using the muscles of the:
   a. Legs  
   b. Back  
   c. Arms  
   d. Stomach

Correct: Legs  
Rationale: Always lift with the muscles of the legs.

10. One technique to prevent slipping is to keep floors clean and dry.
   a. True  
   b. False

Correct: True  
Rationale: This statement is true.

11. The best way to prevent injury during a patient transfer is to:
    a. Use proper body mechanics.  
    b. Transfer the patient manually.  
    c. Use an appropriate transfer device.  
    d. Make sure the patient understands what will happen during the transfer.
Correct: Use an appropriate transfer device.
Rationale: The best way to prevent injury during a patient transfer is to use an appropriate transfer device. Manual transfers put the worker at risk for injury, even if proper body mechanics are used.

12. Latex allergy is particularly common in people who are also allergic to:
   a. Cats  
   b. Bananas  
   c. Poison ivy  
   d. Bee venom

Correct: Bananas
Rationale: Latex allergy is particularly common in patients with food allergies to banana, kiwi, or avocado.

13. The manufacturer of a hazardous chemical must:
   a. (a) Create an MSDS for the chemical.  
   b. (b) Train all purchasers in safe use of the chemical.  
   c. (c) Provide extra product labels for purchasers who transfer the chemical to unmarked containers.  
   d. Both A and B  
   e. All of the above

Correct: Create an MSDS for the chemical.
Rationale: Manufacturers are responsible for researching, creating, and distributing MSDS’s.

14. If you work with hazardous chemicals as part of your job, your employer should:
   a. (a) Train you in the safe use of hazardous chemicals.  
   b. (b) Make hazardous chemical MSDS’s available to you.  
   c. (c) Make sure that all hazardous chemicals are labeled properly.  
   d. Both A and B  
   e. All of the above

Correct: All of the above
Rationale: All of these are responsibilities of the employer.
15. All incidents should be reported immediately.
   a. True
   b. False

Correct: True  
Rationale: This statement is true.

16. Disaster drills:
   a. Are an unnecessary annoyance.
   b. Should be conducted once, when the Emergency Response Plan is first written.
   c. Help ensure that all employees know what to do in the event of an emergency or disaster.
   d. None of the above

Correct: Help ensure that all employees know what to do in the event of an emergency or disaster.  
Rationale: Disaster drills should be conducted on a regular basis, so that employees will know what to do if a real disaster happens.

17. According to current CDC guidelines, visibly soiled hands should be:
   a. Washed with soap and water
   b. Decontaminated with an alcohol-based hand rub
   c. Decontaminated with a chlorhexidine-based hand rub
   d. None of the above

Correct: Washed with soap and water  
Rationale: Visibly soiled hands should be washed with soap and water. For routine hand decontamination in most other clinical situations, use of an alcohol rub is recommended.

18. When decontaminating hands with an alcohol-based rub, apply as much product as the manufacturer recommends. Then:
   a. Allow the product to air-dry.
   b. Rub hands until they are dry.
   c. Dry hands with a paper towel.
   d. Rinse the product off under running water.

Correct: Rub hands until they are dry.  
Rationale: When using an alcohol rub, hands should be rubbed until they are dry. This ensures that the appropriate amount of product will remain in contact with the skin for the necessary amount of time.
19. The most common type of HAI is:
   a. Surgical wound infection
   b. IV catheter entry site infection
   c. Pneumonia, associated with intubation
   d. Urinary tract infection, associated with urinary catheterization

Correct: Urinary tract infection, associated with urinary catheterization
Rationale: UTI associated with urinary catheterization is the most common type of HAI.

20. When an infection is resistant to the antibiotic of choice, a second-line drug must be used. Second-line drugs tend to be:
   a. (a) Less expensive
   b. (b) Less toxic to the patient
   c. (c) Less effective against the infection
   d. Both A and C
   e. All of the above

Correct Answer: Less effective against the infection
Answer Rationale: Second-line drugs are usually less effective, more toxic, and more expensive.

21. Bloodborne diseases include:
   a. Tuberculosis
   b. Chickenpox and measles
   c. Hepatitis B, hepatitis C, and AIDS
   d. All of the above
   e. None of the above

Correct: Hepatitis B, hepatitis C, and AIDS
Rationale: Hepatitis B, hepatitis C, and AIDS are bloodborne diseases.
22. Standard Precautions are used in the care of:

   a. All patients
   b. Only patients with known or suspected HIV infection
   c. Only patients with known HBV, HCV, or HIV infection
   d. Only patients with known or suspected tuberculosis, SARS, or avian flu

Correct: All patients
Rationale: Standard Precautions are used in the care of all patients, regardless of diagnosis.

23. A patient with an airborne-transmitted infection should be placed on Airborne Precautions _______ Standard Precautions.

   a. Or
   b. Instead of
   c. In addition to
   d. After the expiration of

Correct: In addition to
Rationale: Standard Precautions are for all patients. Transmission-Based Precautions are added to Standard Precautions for some patients.

24. Healthcare-associated infections are most commonly transmitted by the ________ route.

   a. Droplet
   b. Contact
   c. Airborne
   d. Standard

Correct: Contact
Rationale: Contact transmission is the most common and important cause of HAI.

25. Respiratory droplets differ from airborne particles in that:

   a. Respiratory droplets cannot travel any farther than three feet.
   b. Respiratory droplets are generated during coughing and sneezing.
   c. Respiratory droplets can remain suspended in the air for long periods of time.
   d. None of the above

Correct: Respiratory droplets cannot travel any farther than three feet.
Rationale: Respiratory droplets cannot travel any farther than three feet. By contrast, airborne particles can remain suspended in the air for long periods and travel long distances.