HealthStream Regulatory Script

Rapid Regulatory Compliance: Clinical: Part II:

Release Date: August 2010
HLC Version: 604

Lesson 1: Introduction
Lesson 2: Safety
Lesson 3: Emergency Preparedness
Lesson 4: Infection Control
Lesson 1: Introduction

Welcome to Rapid Regulatory Compliance: Clinical: Part II.

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 The Joint Commission.
Course Rationale

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.
This introductory lesson gave the course rationale.

Lesson 2 will discuss aspects of safety including personal and facility concerns and best practices.

Lesson 3 will focus on emergency preparedness.

Lesson 4 will discuss infection control. This lesson will provide information on best practices to control the spread of infection in the healthcare environment.

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<td>Introduction</td>
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</table>
| Welcome to the lesson on safety. | • General safety  
• Fire safety  
• Electrical safety  
• Radiation safety  
• MRI safety  
• Ergonomics  
• Back safety  
• Lifting and transferring patients  
• Slips, trips, and falls  
• Latex allergy  
• Hazard communication  
• Security and workplace violence  
• Reporting incidents |
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.
<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Definition</th>
<th>Examples</th>
<th>Safeguards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological</td>
<td>Infectious agents</td>
<td>HIV, VRE, MRSA, HBV, HCV, TB</td>
<td>Infection-control measures (patient placement, PPE [glossary], hand hygiene, etc.)</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 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>
</tr>
</tbody>
</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
Even with the best efforts at prevention, fires sometimes occur. 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 you hear the fire alarm in your facility, you may not know if it is a drill or a true fire. Treat the alarm as if it were a true emergency.

Respond using the **RACE** protocol:
- **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
    - 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.
**Electrical Safety**

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

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**Electric shock happens when electricity flows through the body.**
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>
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</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>
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<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>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Use equipment safely</strong></th>
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<tbody>
<tr>
<td>- Learn proper equipment operation before use.</td>
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<tr>
<td>- Do not use damaged equipment.</td>
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<tr>
<td>- Do not use equipment on which liquid has been spilled.</td>
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<tr>
<td>- Do not operate electrical equipment with wet hands or when standing in water.</td>
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<tr>
<td>- Do not stack anything on or behind electrical equipment.</td>
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<tr>
<td>- Turn equipment off before plugging in or unplugging.</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Maintain, test, and inspect</strong></th>
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<tbody>
<tr>
<td>All medical equipment should be inspected and tested on a regular schedule.</td>
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</tbody>
</table>

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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.

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<thead>
<tr>
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<tbody>
<tr>
<td><strong>Use cords and outlets properly</strong></td>
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</table>
| - 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. |

<table>
<thead>
<tr>
<th>Use circuits safely</th>
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</table>
| - Do not overload circuits.  
  - Label each circuit breaker clearly.  
  - Breaker boxes should be accessible at all times. |

<table>
<thead>
<tr>
<th>Protect patients</th>
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</table>
| - 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 magnet at the center of the MRI system. They can become dangerous (the “projectile effect”).
- Electronic devices that enter the magnetic field of the MRI system can malfunction due to interference.
- Metal implants or wires can conduct electrical currents resulting in burns.

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.
- Properly position patients for MRI so that electrically conductive loops [glossary] are not formed. This will prevent burns.
- Use equipment approved for MRI.
- Restrict access to the MRI suite.

Both patients and staff should remove all metal objects before entering the MRI field.

Don’t forget:

- earrings
- pens and pencils
- coins
- tape measures
- watches and timepieces
- car and house keys
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 to prevent slight injuries from becoming 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.
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<th>Take proper care of the spine while:</th>
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<td>• Standing</td>
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<td>• Sitting</td>
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<tr>
<td>• Lifting a static load vertically</td>
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<tr>
<td>• Lifting or transferring a patient</td>
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</tbody>
</table>

Click on each item for a brief review of key points

**Sleeping**
- 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.

**Standing**
- 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.

**Sitting**
- 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.

**Lifting a static load vertically**
- 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.

**Lifting or transferring a patient**
- 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.

CLICK TO REVEAL

**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.

Patient factors (such as the patient's ability to bear weight) and environmental factors should be looked at. Staff can then decide on:
- The best method for the transfer.
- What equipment or devices will be needed.
- How many staff members will be needed.

Key Assessment Criteria
- Ability of the patient to provide assistance
- Ability of the patient to bear weight
- Upper extremity strength of the patient
- Ability of the patient to cooperate and follow instructions
- Patient height and weight
- Special circumstances likely to affect transfer or repositioning tasks
- Specific physician orders or physical therapy recommendations that relate to transferring or repositioning the patient
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
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 with:
  - 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)
Most falls in the workplace are foot-level falls. In a foot-level fall, a person slips or trips on a walking or standing surface. This results in a short-fall.

Falls-to-below carry a higher risk of injury.

Danger zones for falls-to-below are:
- **Stairs**
- **Ladders**

Click on each for strategies to prevent falls.

### CLICK TO REVEAL

**Stairs**
- Keep staircases clean and well lit.
- Staircases should have sturdy handrails on both sides.
- Take one step at a time.
- Maintain your center of balance when stepping.

**Ladders**
- Use a ladder of the height you need.
- Lock the spreader into position before climbing the ladder.
- Climb straight up and do not lean to either side.
- Hold onto the side rails with both hands while climbing up or down.
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 keeps your arms available for support if you fall.
Latex allergy means sensitivity to contact with certain proteins in latex.

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 [glossary] may be ordered.
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.
Latex Allergy: Management

Healthcare workers are at elevated risk for latex allergy.

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.

CLICK TO REVEAL

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.

<table>
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<tr>
<th>Aggressive Behavior</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tension</td>
<td>Remain calm. Listen. Acknowledge the person's frustration. Try to resolve the problem.</td>
</tr>
<tr>
<td>Disruptiveness</td>
<td>Set clear limits. Remain calm and choose your words carefully, to avoid aggravating the situation. Call security privately if the disruptive behavior continues.</td>
</tr>
<tr>
<td>Loss of Control</td>
<td>Remove yourself from danger and get help. Do NOT try to restrain the person yourself.</td>
</tr>
</tbody>
</table>
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.
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<tr>
<td>Welcome to the lesson on emergency preparedness.</td>
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<th>Lesson 3: Emergency Preparedness</th>
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<tr>
<td>• Disaster events</td>
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<tr>
<td>• Emergency Operations plans</td>
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</table>
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, chemical, and radiologic 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
Facilities document their strategies for dealing with disaster in an Emergency Operations Plan (EOP).

A good EOP should address each phase of disaster management:
- Mitigation
- Preparedness
- Response
- Recovery

It also should include plans for:
- Communication
- Resources and assets
- Safety and security
- Staff responsibilities
- Utilities
- Clinical activities
Beyond Emergency Operations Plans

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
Welcome to the lesson on infection control.

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<th>Lesson 4: Infection Control</th>
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<td>• Hand hygiene</td>
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<td>• Personal responsibility</td>
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</table>
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.
The Joint Commission now expects hospitals to implement evidence-based practices to prevent HAIs in the hospital.

National Patient Safety Goal 7 includes:
- NPSG.07.01.01: Use of appropriate hand hygiene
- NPSG.07.03.01: Prevention of multi-drug resistant organism infections
- NPSG.07.04.01: Prevention of central-line associated bloodstream infections
- NPSG.07.05.01: Prevention of surgical site infections
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. Hand hygiene should also occur after gloves are removed.

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

CDC or WHO guidelines for hand hygiene should be followed.
Hand Hygiene: How

When washing with soap and water:
- 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:
- Apply the amount of rub recommended by the manufacturer
- Rub all surfaces of the hands and wrists until hands are dry
Environmental hygiene also can help prevent HAI.

Best practices for environmental hygiene are:

- Maintain a visibly clean environment (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
Invasive Procedures

Many HAIs 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 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

Antibiotic-resistant infections cost at least twice as much as antibiotic-susceptible infections.

#### 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.

### CLICK TO REVEAL

#### 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 Pathogens

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:
- HIV infection/ AIDS
- Hepatitis B
- Hepatitis C
The Bloodborne Pathogens Standard (BPS) 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.

<table>
<thead>
<tr>
<th>Category</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Handwashing</strong></td>
<td>Wash / decontaminate hands:</td>
</tr>
<tr>
<td></td>
<td>- After touching bodily fluids or contaminated items</td>
</tr>
<tr>
<td></td>
<td>- After removing gloves</td>
</tr>
<tr>
<td></td>
<td>- Between patient contacts</td>
</tr>
<tr>
<td><strong>Gloves</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Wear gloves when touching bodily fluids or contaminated items.</td>
</tr>
<tr>
<td></td>
<td>- Put on clean gloves before touching mucous membranes or non-intact skin.</td>
</tr>
<tr>
<td></td>
<td>- Change gloves between “dirty” and “clean” tasks on the same patient.</td>
</tr>
<tr>
<td></td>
<td>- Remove gloves promptly after use (before going to another patient).</td>
</tr>
<tr>
<td></td>
<td>- Perform hand hygiene immediately.</td>
</tr>
<tr>
<td><strong>Mask, Eye Protection, Face Shield, Gown</strong></td>
<td>Use personal protective equipment (PPE) as necessary to protect against splashes or sprays of bodily fluids.</td>
</tr>
<tr>
<td></td>
<td>- Use masks for catheter insertion or injection into spinal or epidural spaces</td>
</tr>
<tr>
<td><strong>Patient-Care Equipment and Linens</strong></td>
<td>Equipment and linens soiled with bodily fluids should be handled in a way that avoids cross-contamination.</td>
</tr>
<tr>
<td></td>
<td>- Clean and reprocess reusable equipment appropriately before use on another patient.</td>
</tr>
<tr>
<td></td>
<td>- Discard single-use items appropriately.</td>
</tr>
<tr>
<td><strong>Environmental Control</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Environmental surfaces should be cleaned and disinfected on a routine basis.</td>
</tr>
<tr>
<td><strong>Bloodborne Pathogens</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Use sharps (needles, scalpels, etc.) carefully and appropriately.</td>
</tr>
<tr>
<td></td>
<td>- For example, do not bend or recap needles.</td>
</tr>
<tr>
<td></td>
<td>- Use safe injection practices.</td>
</tr>
<tr>
<td></td>
<td>- Take care to prevent accidental sticks.</td>
</tr>
<tr>
<td><strong>Patient Placement</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Patients who contaminate the environment should be placed in private rooms.</td>
</tr>
</tbody>
</table>
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 infectious droplet nuclei.

These tiny 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

Important airborne diseases include:
- Chickenpox and shingles (*disseminated*)
- Measles
- Tuberculosis (TB)

Other diseases that *may* be spread by the airborne route include:
- [SARS](glossary)
- Smallpox

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.

<table>
<thead>
<tr>
<th>Chickenpox</th>
<th>Image credit: Joe Miller/CDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measles</td>
<td></td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>Image credit: CDC</td>
</tr>
</tbody>
</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 cohorted [glossary].</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory Protection</td>
<td>Healthcare staff must wear personal respirators whenever they enter an airborne isolation room. N95 respirators are most commonly used. A surgical mask will not protect against airborne transmission.</td>
</tr>
<tr>
<td>Patient Transport</td>
<td>Patient transport should be limited as much as possible. During necessary transport, the patient should wear a surgical mask, if possible.</td>
</tr>
</tbody>
</table>
Airborne Precautions: Tuberculosis

TB is an airborne disease.

Therefore, Airborne Precautions apply.

In addition, both the CDC and OSHA have specific guidelines for preventing transmission of TB in the healthcare setting.

Click on the following links to access more information:

- **CDC Guidelines** (http://www.cdc.gov/tb/publications/guidelines/infectioncontrol.htm)
- **OSHA TB Enforcement Policy** (link to OSHA_TB.pdf)
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.
Contact Precautions: Diseases

Examples of contact diseases are:
- MRSA
- 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 are to be used, along with Standard Precautions, in the care of all patients with a diagnosed or suspected contact-transmitted disease.

<table>
<thead>
<tr>
<th>Patient Placement</th>
<th>Patients on Contact Precautions are isolated in private rooms or cohorted.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPE</td>
<td>Healthcare staff must don a gown and gloves when entering the room of a patient on Contact Precautions.</td>
</tr>
<tr>
<td>Hand Antisepsis</td>
<td>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 Precautions: Background

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. Droplets may also contaminate surfaces.

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><strong>Patient Placement</strong></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><strong>PPE</strong></td>
<td>Healthcare staff should don gloves and a mask when entering the room of a patient on Droplet Precautions. A gown and eye protection also may be needed.</td>
</tr>
<tr>
<td><strong>Hand Antisepsis</strong></td>
<td>Hands should be decontaminated immediately after removing gloves.</td>
</tr>
<tr>
<td><strong>Patient Transport</strong></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
Personal Responsibility

As a healthcare worker, you have personal responsibilities for infection control in your facility.

Maintain immunity to vaccine-preventable diseases such as:
- Hepatitis B
- Measles
- Varicella (chickenpox)
- Rubella
- Mumps

Report all unprotected exposures, such as accidental needlesticks.

Stay home from work when you are sick.
### Glossary

<table>
<thead>
<tr>
<th>#</th>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>aerobic exercise</strong></td>
<td>continuous activity that requires the use of increased oxygen to maintain the function of the body's cells</td>
</tr>
<tr>
<td></td>
<td><strong>antibody</strong></td>
<td>protein produced by immune cells to fight infection</td>
</tr>
<tr>
<td></td>
<td><strong>CDC</strong></td>
<td>Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td></td>
<td><strong>CMS</strong></td>
<td>Centers for Medicare and Medicaid Services</td>
</tr>
<tr>
<td></td>
<td><strong>cohort</strong></td>
<td>to group together patients with the same active infection, but no other infection</td>
</tr>
<tr>
<td></td>
<td><strong>electrically conductive loop</strong></td>
<td>complete circuit through which electricity is able to flow</td>
</tr>
<tr>
<td></td>
<td><strong>ferromagnetic</strong></td>
<td>able to be attracted by a magnet</td>
</tr>
<tr>
<td></td>
<td><strong>HBV</strong></td>
<td>hepatitis B virus</td>
</tr>
<tr>
<td></td>
<td><strong>HCV</strong></td>
<td>hepatitis C virus</td>
</tr>
<tr>
<td></td>
<td><strong>HIV</strong></td>
<td>human immunodeficiency virus; the cause of AIDS</td>
</tr>
<tr>
<td></td>
<td><strong>ventricular fibrillation</strong></td>
<td>an ineffective heart rhythm that if not corrected will lead to cardiac arrest and death</td>
</tr>
<tr>
<td></td>
<td><strong>JCAHO</strong></td>
<td>Joint Commission on the Accreditation of Healthcare Organizations</td>
</tr>
<tr>
<td></td>
<td><strong>LIP</strong></td>
<td>licensed independent practitioner; most often a physician, but also sometimes a nurse practitioner or other healthcare professional</td>
</tr>
<tr>
<td></td>
<td><strong>MRI</strong></td>
<td>magnetic resonance imaging</td>
</tr>
<tr>
<td></td>
<td><strong>MRSA</strong></td>
<td>methicillin-resistant <em>Staphylococcus aureus</em></td>
</tr>
<tr>
<td></td>
<td><strong>NIOSH</strong></td>
<td>National Institute of Occupational Safety and Health</td>
</tr>
<tr>
<td></td>
<td><strong>OIG</strong></td>
<td>Office of the Inspector General of the Department of Health and Human Services (DHHS)</td>
</tr>
<tr>
<td></td>
<td><strong>OSHA</strong></td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td></td>
<td><strong>PPE</strong></td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td></td>
<td><strong>pulsed radiofrequency fields</strong></td>
<td>electromagnetic fields used during MRI to cause tissues of the body to give off magnetic resonance signals</td>
</tr>
<tr>
<td></td>
<td><strong>projectile</strong></td>
<td>an object (as a weapon) that is thrown, sent, or cast forward</td>
</tr>
<tr>
<td></td>
<td><strong>restraint</strong></td>
<td>any physical or chemical method for restricting a patient’s movement, activity, or normal access to his or her own body</td>
</tr>
<tr>
<td></td>
<td><strong>seclusion</strong></td>
<td>involuntary confinement of a patient in a room alone</td>
</tr>
<tr>
<td></td>
<td><strong>TB</strong></td>
<td>tuberculosis</td>
</tr>
<tr>
<td></td>
<td><strong>UTI</strong></td>
<td>urinary tract infection</td>
</tr>
<tr>
<td></td>
<td><strong>VRE</strong></td>
<td>vancomycin-resistant enterococci</td>
</tr>
<tr>
<td></td>
<td><strong>type I allergy</strong></td>
<td>immediate hypersensitivity reaction; can be fatal</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>type IV allergy</td>
<td>delayed hypersensitivity reaction; causes a red, itchy, scaly rash</td>
<td></td>
</tr>
<tr>
<td>irritant contact dermatitis</td>
<td>inflammation of the skin due to contact with a substance</td>
<td></td>
</tr>
<tr>
<td>SARS</td>
<td>severe acute respiratory syndrome</td>
<td></td>
</tr>
<tr>
<td>impetigo</td>
<td>a bacterial skin infection with pus-filled blisters</td>
<td></td>
</tr>
<tr>
<td>conjunctivitis</td>
<td>an infection and/or inflammation of the inner lining of the eyelid, commonly called “pink eye”</td>
<td></td>
</tr>
</tbody>
</table>
Exam

1. What is the BEST defense against fire?
   a. Prevention
   b. Fire extinguisher
   c. Smoke/fire doors
   d. Clearly marked exits

Correct: A
Rationale: Prevention is the best defense against fire.

2. What protocol is used to respond to a fire?
   a. FIRE
   b. SAVE
   c. RACE
   d. SMOKE

Correct: C
Rationale: Respond to fires using the RACE protocol: rescue, alarm, confine, extinguish/evacuate.

3. What is a best practice for preventing electrical accidents in your facility?
   a. Remove and report electrical hazards
   b. Use electrical equipment properly
   c. Maintain, test, and inspect equipment
   d. All of the above

Correct: D
Rationale: All of these are best practices to prevent electrical accidents in your facility.

4. What is a best practice for protecting patients from electric shock and injury?
   a. Removing the casing from electric devices
   b. Placing electric devices at a distance from patients
   c. Touching patients and electric devices at the same time
   d. All of the above

Correct: B
Rationale: Whenever possible, electric equipment should be placed at a distance from patients.
5. Where is the "projectile effect" a hazard?
   a. In a laser room
   b. In an MRI field
   c. In a clinical lab
   d. In an operating suite

Correct: B
Rationale: Ferromagnetic objects are attracted to the magnet at the center of an MRI system. They can become dangerous projectiles (the "projectile effect").

6. Which practice helps to protect the back from injury when sitting at a desk typing?
   a. Form 90-degree angles at the knees
   b. Form 90-degree angles at the hips
   c. Keep the wrists straight
   d. All of the above

Correct: D
Rationale: When sitting at a desk typing, form 90-degree angles at the knees, hips, and elbows. The wrists should be kept straight.

7. What is the BEST method to prevent injury from lifting and transferring patients?
   a. Perform team lifting
   b. Eliminate manual lifting
   c. Use safe lifting techniques
   d. Use proper body mechanics

Correct: B
Rationale: Many patient handling tasks are simply unsafe when performed manually. Therefore, manual lifting should be minimized, or, if possible, eliminated

8. Most falls in the workplace are:
   a. Falls to below from ladders
   b. Falls to below from stairs
   c. Foot-level falls
   d. A or B

Correct: C
Rationale: Most falls in the workplace are foot-level falls.

9. How should you walk when conditions are hazardous (for example, the floor is wet)?
a. Point toes inward
b. Walk on your tip-toes
c. Take short, quick steps
d. Make wide turns at corners

Correct: D
Rationale: When conditions are hazardous, make wide turns at corners to help prevent slipping and falling.

10. Which patient is at risk for latex allergy?
   a. Patient A is allergic to bananas.
   b. Patient B uses condoms consistently.
   c. Patient C has no history of unexplained problems during surgery.
   d. Patient D has no history of breathing problems during dental exams.

Correct: A
Rationale: Patients are at increased risk for latex allergy if they have food allergies, especially allergy to bananas, avocados, or kiwis.

11. What is a material safety data sheet (MSDS)?
   a. A safety training manual
   b. A protocol for handling biohazards
   c. A document that lists the specific hazards of a chemical
   d. A label that correctly identifies the chemical in a container

Correct: C
Rationale: An MSDS lists the specific hazards of a chemical. If you work with hazardous chemicals, you should know where MSDSs are located on your unit and how to read an MSDS. You also should read all relevant MSDSs before starting a particular job.

12. A patient sits in his doctor’s waiting room for more than an hour. After almost 90 minutes of waiting, the patient loses control. What should the receptionist do?
   a. Remain calm and listen
   b. Try to restrain the patient
   c. Acknowledge the patient’s frustration
   d. Remove herself from danger and get help

Correct: D
Rationale: When a person reaches the point of losing control, it is important to get out of the way of danger and call for help.

13. What is one of the six key elements of an emergency operations plan?
   a. HazMat suits
   b. Terrorism response
c. Staff responsibilities

d. Physician call schedule

Correct: C
Rationale: An emergency operations plan should center on six key elements: communication, resources and assets, safety and security, staff responsibilities, utilities, and clinical activities.

14. The Joint Commission expects hospitals to implement practices to prevent healthcare-associated infections (HAIs). What is one of these practices?
   a. Use of proper hand hygiene
   b. Use of iodine for disinfecting surgical tools
   c. Use of Contact Precautions for all admitted patients
   d. Use of Airborne Precautions for all admitted patients

Correct: A
Rationale: National Patient Safety Goal 7 includes use of appropriate hand hygiene.

15. What does the CDC recommend for hand hygiene when the hands are visibly soiled?
   a. Alcohol-based rub
   b. Soap and water
   c. Chlorine-based rub
   d. Either A or B

Correct: B
Rationale: The CDC recommends washing hands with soap and water when the hands are visibly soiled. An alcohol-based hand rub is recommended for routine decontamination of hands between patient contacts when the hands are not visibly soiled.

16. What device is associated with the most common type of HAI?
   a. Endoscope
   b. Central line
   c. Orthopedic implant
   d. Indwelling urinary catheter

Correct: D
Rationale: The most common type of HAI is urinary tract infection (HAI), associated with indwelling urinary catheters.

17. What is a good strategy for helping to prevent the spread of antibiotic resistance?
   a. Give antibiotics for colds and flu.
   b. Use broad-spectrum antibiotics.
c. Prevent infection through vaccination.
d. All of these.

Correct answer: C
Rationale: To help prevent the spread of antibiotic resistance, prevent infection. One of the best techniques we have to prevent infection is vaccination.

18. What is a key tool for protecting healthcare workers from exposure to bloodborne pathogens?
   a. Prophylactic drugs
   b. Standard Precautions
   c. Vaccination against HIV/AIDS
   d. Refusing to treat patients with hepatitis

Correct: B
Rationale: Standard Precautions should be used in the care of all patients, to protect against exposure to bodily fluids.

19. Staff must wear personal respirators whenever they enter the room of a patient with:
   a. HIV/AIDS
   b. Common cold
   c. Influenza
   d. Tuberculosis

Correct: D
Rationale: Tuberculosis is an airborne disease. Airborne Precautions should be used in the care of patients with tuberculosis.

20. Which of the following is a part of Contact Precautions?
   a. Healthcare staff must wear personal respirators.
   b. Patients are isolated in private rooms or cohorted.
   c. Rooms have special air handling and ventilation systems.
   d. Healthcare staff must be decontaminated after contact with the patient.

Correct: B
Rationale: Patients on Contact Precautions should be isolated in private rooms or cohorted.