
HealthStream Regulatory Script

Rapid Regulatory Compliance: Clinical: Part II:

Gen/Fire/Elec/Back/Rad./MRI Safety, Ergo, Lift/Transp, Slips/Trips/Falls, LatexAllergy, HazComm, WorkplaceViol., EmergPrep, Infec.Control:HAI, HandHyg, Bloodborne, StdPrec, Airborne/Contact/Droplet Prec, PPE

Version: May 2008

Lesson 1: Introduction

Lesson 2: Safety

Lesson 2: Emergency Preparedness

Lesson 3: Infection Control

Lesson 1: Introduction

1001

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.

IMAGE: 1001.JPG



1002

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.

IMAGE: 1002.JPG



1003

Course Outline

This introductory lesson gave the course rationale.

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.

FLASH ANIMATION: Course Map

Lesson 1: Introduction

Lesson 2: 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

Lesson 3: Emergency Preparedness

- Disaster events
- Emergency Operations Plans

Lesson 4: Infection Control

- Healthcare associated infection
- Hand hygiene
- Environmental hygiene
- Antibiotic use
- Bloodborne pathogens
- Airborne precautions
- Contact precautions
- Droplet precautions
- Personal protective equipment
- Personal responsibility

Lesson 2: Safety

2001

Introduction

Welcome to the lesson on safety.

FLASH ANIMATION: Lesson Map

Lesson 2: 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

2002

General Safety

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.

IMAGE: 2002.JPG



2003

General Safety: Hazards and Safeguards

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

2004

Fire Safety: Prevention

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

IMAGE: 2004.JPG



2005

Fire Safety: Safeguards in the Event of Fire

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.

FLASH ANIMATION: 2005.SWF



Fire Safety: Response

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**
- **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
- 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.

2007

Electrical Safety

Most equipment in the healthcare setting is electric.

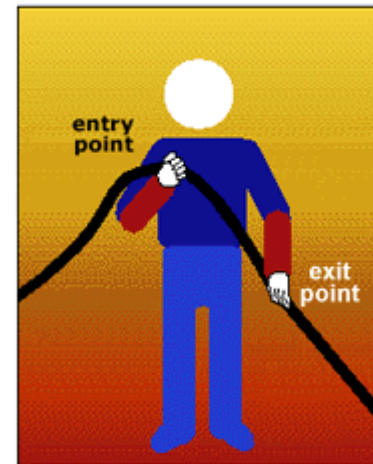
This means there is risk of electric shock from medical equipment.

Electric shock can cause:

- Burns
- Muscle spasms
- Ventricular fibrillation [glossary]
- Respiratory arrest
- Death

IMAGE: 2007.JPG

**Electric shock happens
when electricity flows
through the body.**



2008

Electrical Safety: Preventing Accidents

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.

CLICK TO REVEAL

Remove and report hazards

Remove electrical equipment from service if it:

- Malfunctions
- Shows signs of damage
- Shows signs of unusual heating
- Produces a burning smell during operation
- Shocks staff or patients

Report the hazard according to facility protocol. Submit the equipment for repair.

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.

2010

Radiation Safety

Exposure to radiation can increase the risk of cancer.

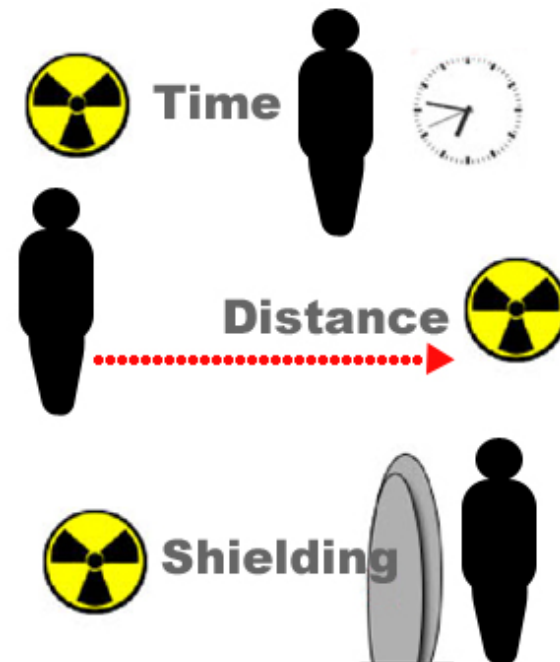
Therefore, it is important to protect against exposure.

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)**.

IMAGE: 2010.JPG



2011

MRI Safety

An **MRI [glossary]** system is not an inherent biological hazard.

However, hazards can arise when certain items enter the MRI system:

- **Ferromagnetic [glossary]** objects are attracted to the magnet at the center of the MRI system. They can become dangerous **projectiles [glossary]** (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.

IMAGE: 2011.GIF

Injury during an MRI can result from:

- **Ferromagnetic objects that become projectiles**
- **Electronic device malfunction**
- **Electrical currents in metal implants or wires**

2012

MRI Safety

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.

IMAGE: 2012.JPG

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

Don't forget:



2013

Ergonomics

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.

IMAGE: 2013.jpg



2014

Ergonomics

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.

IMAGE: 2014.JPG



2015

Back Safety

Healthcare is a high-risk setting for back pain and injury.

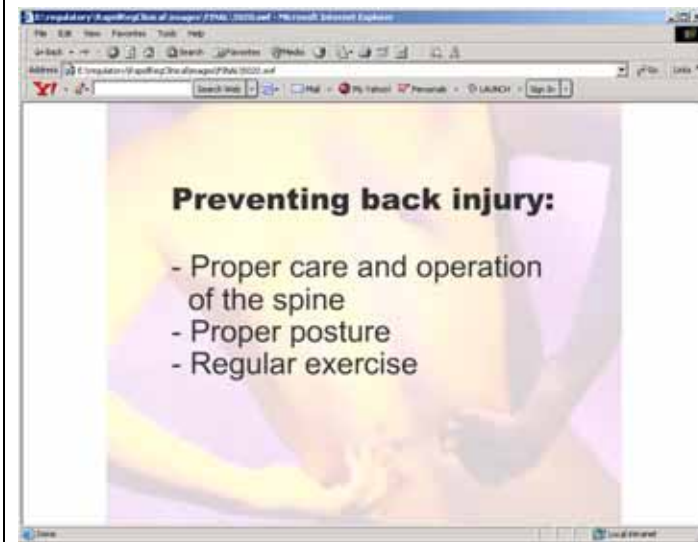
Healthcare workers who lift and move patients are at especially high risk for injury.

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.

FLASH ANIMATION: 2015.SWF



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

CLICK TO REVEAL

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.

2017

Back Safety: Proper Posture

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.

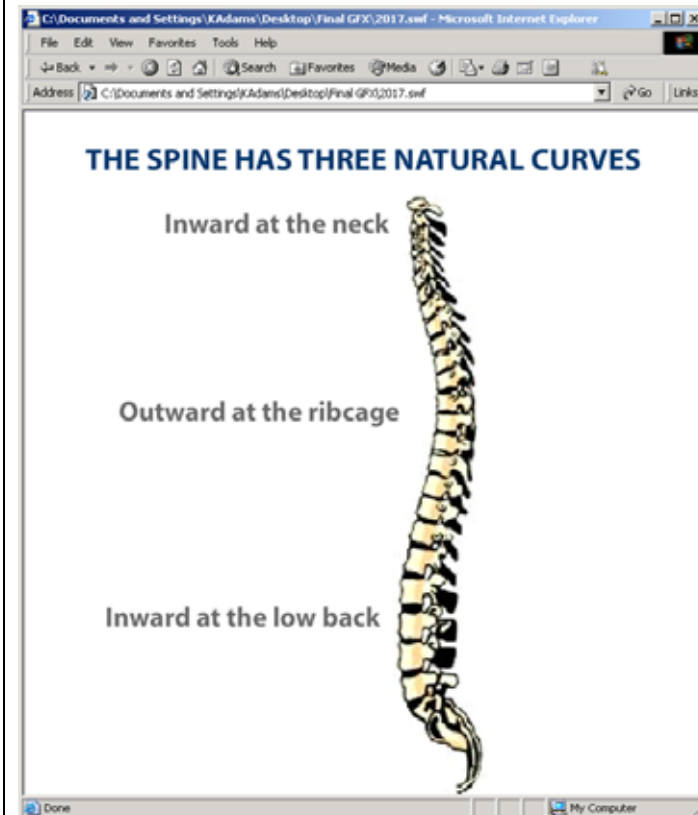
In the front-to-back plane of the body, the cord should pass through:

- 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

IMAGE: 2017.SWF



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 [glossary]** 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.

2019

Lifting and Transferring Patients

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.

CLICK TO REVEAL

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.

2020

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.

IMAGE: 2020.JPG



2021

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.

IMAGE: 2021.JPG

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

2022

Slips, Trips, and Falls: Prevention

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

IMAGE: 2022.JPG



2023

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 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.).

IMAGE: 2023.JPG



2024

Slips, Trips, and Falls: Preventing Trips

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)

IMAGE: 2024.JPG



Trips can result from lighting that is too bright or too dim.

2025

Slips, Trips, and Falls: Preventing Falls

Danger zones for falls are:

- [Stairs](#)
- [Ladders](#)
- [Vehicles and equipment](#)

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.
- 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 and 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.

2026

Slips, Trips, and Falls: Minimizing Risk

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.

IMAGE: 2026.jpg



2027

Latex Allergy: Screening and Diagnosis

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.

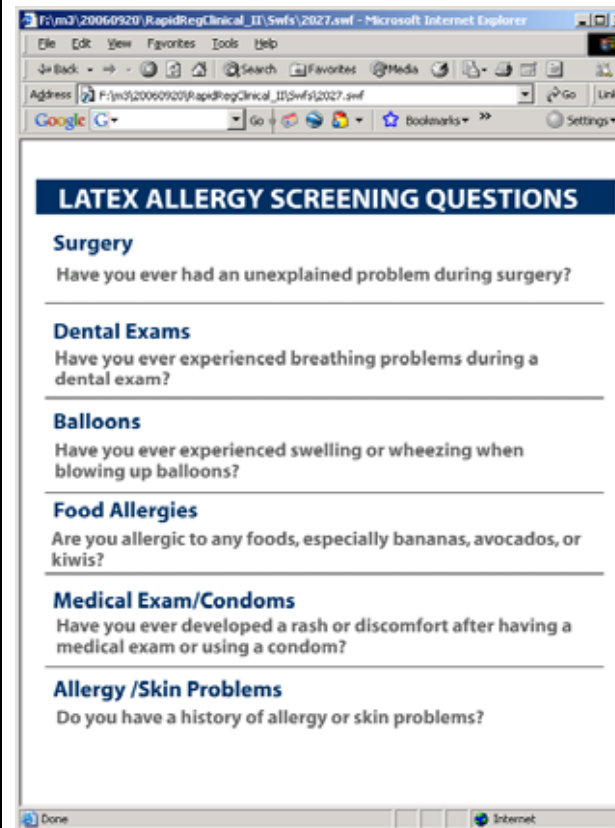
Review the questions in the table to the right.

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.

IMAGE: 2027.SWF



LATEX ALLERGY SCREENING QUESTIONS

Surgery
Have you ever had an unexplained problem during surgery?

Dental Exams
Have you ever experienced breathing problems during a dental exam?

Balloons
Have you ever experienced swelling or wheezing when blowing up balloons?

Food Allergies
Are you allergic to any foods, especially bananas, avocados, or kiwis?

Medical Exam/Condoms
Have you ever developed a rash or discomfort after having a medical exam or using a condom?

Allergy /Skin Problems
Do you have a history of allergy or skin problems?

2028

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.

IMAGE: 2028.JPG



2029

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.

IMAGE: 2028.JPG



Hazard Communication

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.

IMAGE: 2031.JPG

Aggressive Behavior

Response

 Tension	Remain calm. Listen. Acknowledge the person's frustration. Try to resolve the problem.
 Disruptiveness	Set clear limits. Remain calm and choose your words carefully, to avoid aggravating the situation. Call security privately if the disruptive behavior continues.
 Loss of Control	Remove yourself from danger and get help. Do NOT try to restrain the person yourself.

2032

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.

IMAGE: 2032.jpg



The image shows a 'Workplace Health & Safety Incident Report' form. The form is titled 'Incident Report' and 'Workplace Health & Safety'. It contains fields for Name, Address, Contact Person, Telephone, Date of Birth, Location of Accident, and Date of Accident. There is also a section for 'Please complete the following statement' and a line for 'What were you doing at the time of the accident?'.

Lesson 3: Emergency Preparedness

3001

Introduction

Welcome to the lesson on emergency preparedness.

FLASH ANIMATION: Lesson Map

Lesson 3: Emergency Preparedness

- Disaster events
- Emergency Operations plans

3002

Types of Disaster Events

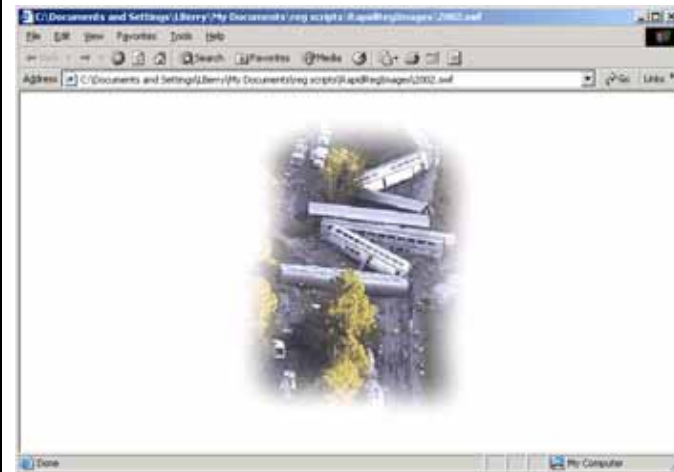
Healthcare organizations must be prepared to respond disasters such as:

- 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

FLASH ANIMATION: 3002.SWF



3003

Emergency Operations Plans

Facilities document their strategies for dealing with disaster in an Emergency Operations 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

IMAGE: 3003.JPG



Lesson 4: Infection Control

4001

Introduction	
Welcome to the lesson on infection control.	<p>FLASH ANIMATION: Lesson Map</p> <p>Lesson 4: Infection Control</p> <ul style="list-style-type: none">• Healthcare associated infection• Hand hygiene• Environmental hygiene• Antibiotic use• Bloodborne pathogens• Airborne precautions• Contact precautions• Droplet precautions• Personal protective equipment• Personal responsibility
Page 1 of 28	

4002

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

IMAGE: 4002.JPG



4003

HAI: Cause

HAIs 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.

IMAGE: 4003.JPG

Human Sources of Infectious Agents:



Patients



Staff Members



Hospital Visitors

4004

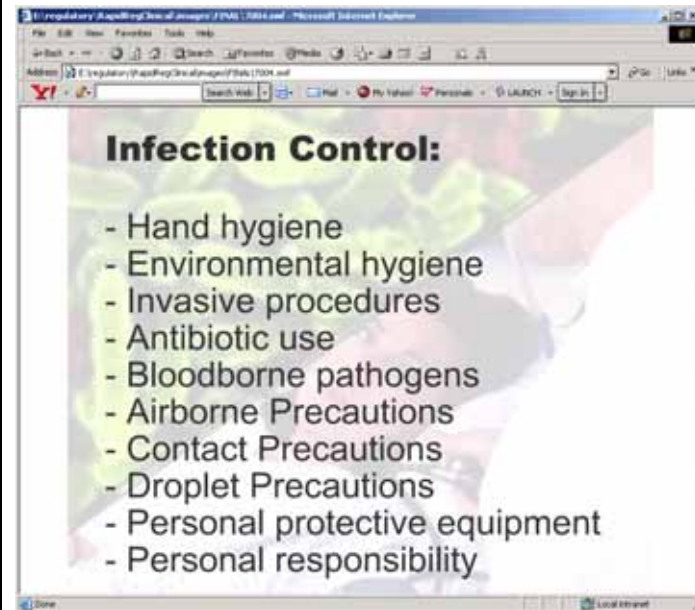
HAI: Prevention

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.

FLASH ANIMATION: 4004.SWF



4005

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

IMAGE: 4005.JPG



4006

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

IMAGE: 4006.JPG



4007

Environmental Hygiene

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

IMAGE: 4007.jpg



4008

Invasive Procedures

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.

IMAGE: 4008.jpg



4009

Antibiotic Use: Antibiotic Resistance

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.

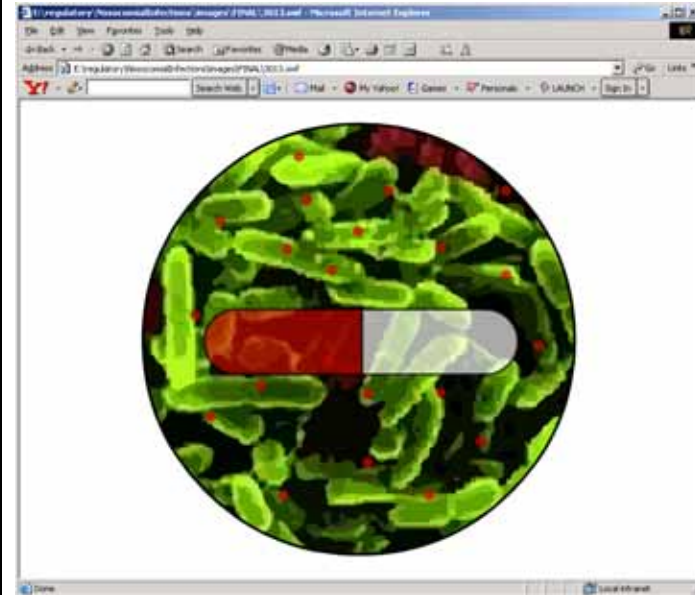
However, bacteria are very adaptable. They have the ability to change genetically to resist the effects of antibiotics.

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)

FLASH ANIMATION: 4009.SWF



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.

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.

4012

Bloodborne Pathogens

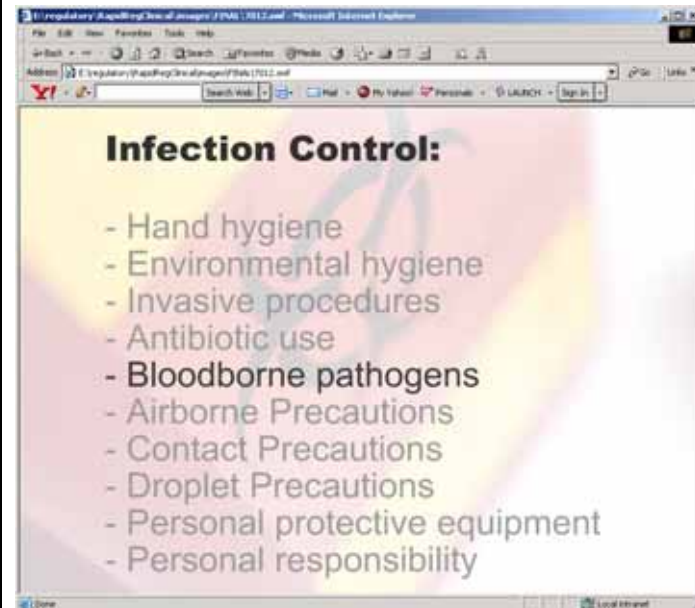
Bloodborne diseases are spread from person to person as a result of unprotected exposure to:

- Infected blood
- Other bodily fluids
- Non-intact skin
- Moist body tissues

Important bloodborne diseases include:

- AIDS
- Hepatitis B
- Hepatitis C

FLASH ANIMATION: 4012.SWF



4013

Bloodborne Pathogens: Bloodborne Pathogens Standard

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.

IMAGE: 4013.JPG



4014

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).

IMAGE: 4014.JPG



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

Handwashing	Wash / decontaminate hands: <ul style="list-style-type: none"> • After touching bodily fluids or contaminated items • After removing gloves • Between patient contacts
Gloves	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Use personal protective equipment (PPE) as necessary to protect against splashes or sprays of bodily fluids.
Patient-Care Equipment and Linens	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Environmental surfaces should be cleaned and disinfected on a routine basis.
Bloodborne Pathogens	<ul style="list-style-type: none"> • Use sharps (needles, scalpels, etc.) carefully and appropriately. For example, do not bend or recap needles. • Use safe injection practices. • Take care to prevent accidental sticks.
Patient Placement	<ul style="list-style-type: none"> • Patients who contaminate the environment should be placed in private rooms.

4016

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.

IMAGE: 4016.JPG



4017

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.

FLASH ANIMATION: 4017.SWF



Important airborne diseases include:

- Chickenpox and shingles
- Measles
- Tuberculosis (TB)

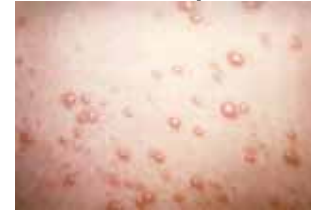
Other diseases that *may* be spread by the airborne route include:

- 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.

FLASH ANIMATION: 4018.SWF

Chickenpox

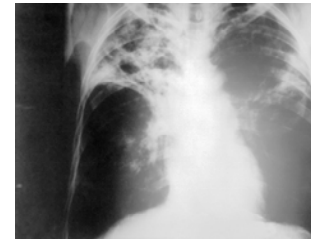


Joe Miller/CDC

Measles



Tuberculosis



CDC

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.

Patient Placement	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] .
Respiratory Protection	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.
Patient Transport	Patient transport should be limited as much as possible. During necessary transport, the patient should wear a surgical mask, if possible.

4020

Airborne Precautions: Tuberculosis

TB is an airborne disease.

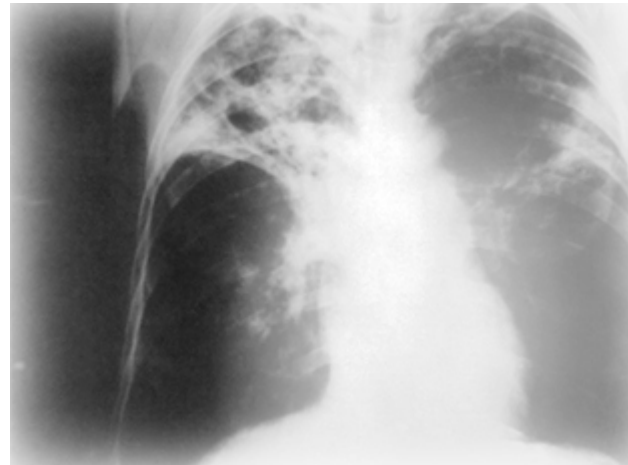
Therefore, Airborne Precautions apply.

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](#) (link to CDCGuidelines.pdf)
- [OSHA TB Enforcement Policy](#) (link to OSHA_TB.pdf)

IMAGE: 4020.JPG



CDC

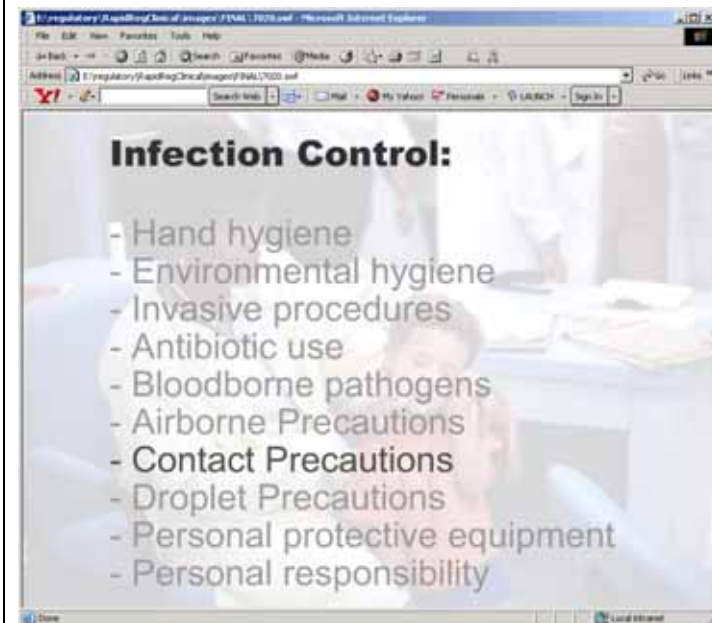
4021

Contact Precautions: Background

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.

FLASH ANIMATION: 4021.SWF



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.

FLASH ANIMATION: 4022.SWF

Hepatitis A



Thomas F. Sellers/CDC

Respiratory Syncytial Virus



H. Craig Lyerla/CDC

Impetigo



CDC

Contact Precautions: Summary Table

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

Patient Placement	Patients on Contact Precautions are isolated in private rooms or cohorted.
Gloves, Gowns, and Hand Antisepsis	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.
Patient Transport	Patient transport should be limited as much as possible.
Patient-Care Equipment	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.

4024

Droplet Precautions: Background

Droplet transmission happens via large respiratory droplets.

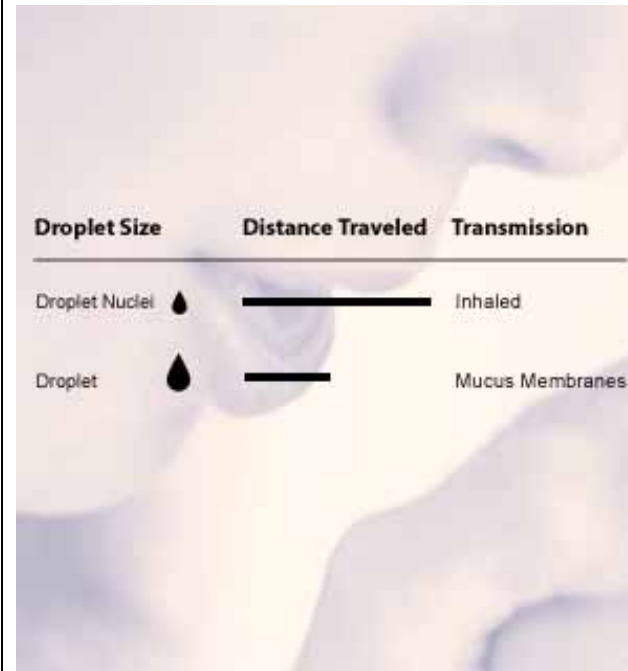
These droplets:

- 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.

Disease transmission then may occur.

IMAGE: 4024.JPG



4025

Droplet Precautions: Diseases

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.

FLASH ANIMATION: 4025.SWF

Mumps



CDC

Rubella



CDC

Influenza



4026

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.

Patient Placement	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.
Masks	Healthcare staff should use masks whenever caring for or working within three feet of a patient on Droplet Precautions.
Patient Transport	Patient transport should be limited as much as possible.

4027

Personal Protective Equipment

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

PPE helps to prevent the spread of microorganisms both:

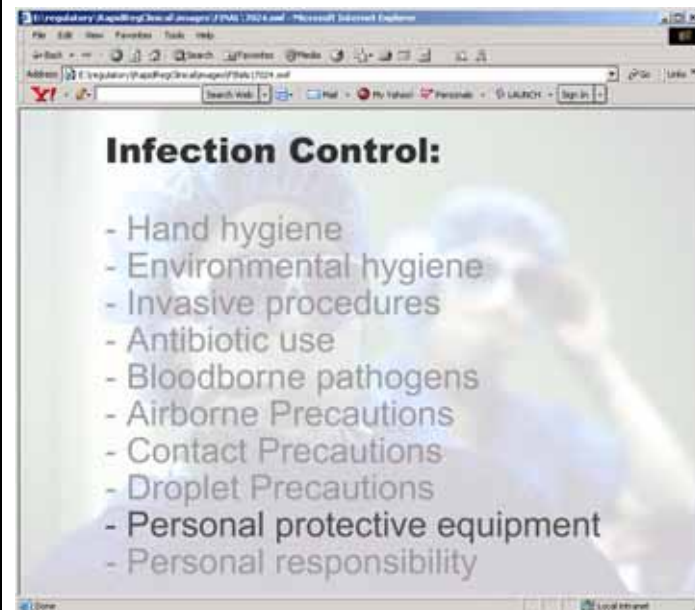
- From patient to healthcare worker
- From healthcare worker to patient

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

FLASH ANIMATION: 4027.SWF



4028

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.

IMAGE: 4028.jpg



Glossary

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

	<i>irritant contact dermatitis</i>	inflammation of the skin due to contact with a substance
	<i>SARS</i>	severe acute respiratory syndrome
	<i>impetigo</i>	a bacterial skin infection with pus-filled blisters
	<i>conjunctivitis</i>	an infection and/or inflammation of the inner lining of the eyelid, commonly called "pink eye"

Final Exam

1. An example of a BIOLOGICAL hazard in the healthcare workplace is:

- a. Slippery floors
- b. Hepatitis B virus
- c. Hazardous drugs
- d. Electrical equipment

Correct: Hepatitis B virus

Rationale: Biological hazards are germs. HBV is an example.

2. One safeguard against CHEMICAL hazards in the healthcare workplace is:

- a. Infection control
- b. Stress management
- c. Fire walls and doors
- d. Engineering controls

Correct: Engineering controls

Rationale: Engineering controls are one safeguard against chemical hazards. Other safeguards are work practice controls and PPE.

3. The best defense against fire is:

- a. Prevention
- b. Emergency exit doors
- c. Dry chemical extinguishers
- d. Carbon dioxide extinguishers

Correct: Prevention

Rationale: It is best to prevent fires.

4. When responding to fire in a healthcare facility, follow the "RACE" protocol. The "R" in "RACE" stands for:

- a. React
- b. Rescue
- c. Resume
- d. Respond

Correct: Rescue

Rationale: The first step in the RACE protocol is to rescue all patients in the area of the fire.

5. Electric shock is a:
- a. Physical hazard
 - b. Chemical hazard
 - c. Biological hazard
 - d. Psychological hazard

Correct: Physical hazard

Rationale: Electric shock is a physical hazard

6. Electrical equipment that shows signs of damage or unusual heating should be:
- a. Used only in non-patient areas
 - b. Handled with caution when in use
 - c. Removed from service and repaired
 - d. Tagged to warn future users to use with care

Correct: Removed from service and repaired

Rationale: This equipment is a hazard. It should be removed from service and submitted for repair.

7. The three key factors for limiting exposure to radiation are time, distance, and:
- a. ALARA
 - b. Shielding
 - c. Ferromagnetism
 - d. The projectile effect

Correct: Shielding

Rationale: When working with radiation, the goal is to keep exposure as low as reasonably achievable (ALARA). To do so, make appropriate use of time, distance, and shielding.

8. An ergonomic best practice is:
- a. Repeat movements as rapidly as possible
 - b. Fit the human body to the needs of the job
 - c. Avoid awkward and difficult movements or postures
 - d. Fit the human body to the constraints of small spaces

Correct: Avoid awkward and difficult movements or postures

Rationale: Awkward and difficult movements and postures are a risk factor for injury. An ergonomic best practice is to avoid these types of movements and postures.

9. For back health, it is best to sleep:

- a. On the back
- b. On the left side
- c. On the stomach
- d. On the right side

Correct: On the back

Rationale: Sleeping on the back is best for back health.

10. To protect the back when lifting a static load vertically, lift primarily with the muscles of the:

- a. Legs
- b. Low back
- c. Shoulders
- d. Upper back

Correct: Legs

Rationale; Use the legs to generate force for lifting.

11. To prevent injury when lifting an adult patient, the best practice is:

- a. Perform the lift manually using proper body mechanics
- b. Perform the lift according to a standard protocol for manual lifting
- c. Perform the lift with the help of a motorized or non-motorized device
- d. Perform the lift manually with the help of one or two other staff members

Correct: Perform the lift with the help of a motorized or non-motorized device

Rationale: According to OSHA, manual lifting should be minimized or eliminated. Devices should be used to assist with lifting and transferring patients.

12. To prevent slips, which of the following is a good footwear choice?

- a. High heels
- b. Soft rubber soles
- c. Soles worn smooth
- d. Patent leather soles

Correct: Soft rubber soles

Rationale: Soft rubber soles are the best choice for traction to prevent slipping.

13. If you must walk across an icy sidewalk or wet floor, minimize risk of slipping and falling by:

- a. Taking slow, long steps
- b. Taking quick, long steps
- c. Taking slow, short steps
- d. Taking quick, short steps

Correct: Taking slow, short steps

Rationale: "Walk like a duck" with slow, short steps to prevent slips on a slick surface.

14. Of the following, the most likely indicator of possible latex allergy is:

- a. Unexplained headaches
- b. Frequent urinary tract infections
- c. Problems with dizziness or vertigo
- d. Swelling when blowing up balloons

Correct: Swelling when blowing up balloons

Rationale: Stretchy balloons are made of latex. Someone who has had swelling when blowing up balloons may be allergic to latex.

15. Developing material safety data sheets (MSDS) for hazardous chemicals is the responsibility of chemical:

- a. End users
- b. Distributors
- c. Purchasers
- d. Manufacturers

Correct: Manufacturers

Rationale: Manufacturers have the duty to develop MSDS.

16. Employers must maintain a file of material safety data sheets (MSDS):

- a. Only when requested by workers
- b. For all hazardous chemicals used by workers
- c. Only if hazardous chemicals are stored in unlabeled containers
- d. Only after there has been a hazardous chemical accident at the facility

Correct: For all hazardous chemicals used by workers

Rationale: MSDS must be maintained for all hazardous chemicals used by workers.

17. Which of the following best describes one feature of an incident?

- a. Injury does not occur.
- b. Safety is compromised.
- c. Near-injury does not occur.
- d. Normal procedures are followed.

Correct: Safety is compromised.

Rationale: In an incident, normal procedures are not followed. Safety is compromised. Injury or near-injury occurs.

18. For preventing the spread of infection in the healthcare setting, the single most important factor is:

- a. Antibiotic use
- b. Hand hygiene
- c. Adherence to the Bloodborne Pathogens Standard
- d. Use of respirators when airborne pathogens may be present

Correct: Hand hygiene

Rationale: Hand hygiene is the single most important factor to prevent the spread of infection.

19. For routine decontamination of hands between patient contacts, the CDC recommends:

- a. Plain soap and water
- b. Iodine-based hand rubs
- c. Alcohol-based hand rubs
- d. Antimicrobial soap and water

Correct: Alcohol-based hand rubs

Rationale: Alcohol rubs are recommended for routine hand decontamination.

20 The most common type of healthcare-associated infection (HAI) is:

- a. AIDS
- b. Meningitis
- c. Urinary tract infection
- d. Upper respiratory infection

Correct: Urinary tract infection

Rationale: The most common HAI is UTI, associated with indwelling catheters.

21. Resistant strains of bacteria become more and more common when:

- a. Antibiotics are used more and more.
- b. Antibiotics are not used often enough.
- c. Bacteria are unable to change genetically.
- d. Bacteria are killed with non-specific agents.

Correct: Antibiotics are used more and more.

Rationale: When antibiotics are used more, resistant bacteria are more likely to emerge.

22. For preventing the spread of antibiotic resistance, a best practice for the use of antibiotics to treat disease is:

- a. Use of multiple antibiotics
- b. Use of a targeted antibiotic
- c. Use of broad-spectrum antibiotics
- d. Use of antibiotics to treat viral illness

Correct: Use of a targeted antibiotic

Rationale: Whenever possible, antibiotics should be targeted to the known or suspected pathogen. Multiple antibiotics and broad-spectrum antibiotics should be avoided.

23. An important airborne disease is:

- a. The flu
- b. Strep throat
- c. Chickenpox
- d. The common cold

Correct: Chickenpox

Rationale: Chickenpox is airborne.

24. An important bloodborne disease is:

- a. TB
- b. AIDS
- c. Measles
- d. Smallpox

Correct: AIDS

Rationale: AIDS is bloodborne.

25. Standard Precautions must be used in the care of:
- a. All patients
 - b. Patients known to have hepatitis B
 - c. Patients known to have hepatitis B or C
 - d. Patients known to have any bloodborne disease

Correct: All patients

Rationale: Use Standard Precautions in the care of ALL patients.

26. Patients must be isolated or cohorted if they are on:
- a. Contact Precautions
 - b. Standard Precautions
 - c. Universal Precautions
 - d. Bloodborne Precautions

Correct: Contact Precautions

Rationale: Contact Precautions call for isolating or cohorting patients.

27. A patient with influenza should be placed on:
- a. Droplet Precautions
 - b. Contact Precautions
 - c. Airborne Precautions
 - d. Both Droplet and Airborne Precautions

Correct: Droplet Precautions

Rationale: The flu is spread by droplet. Therefore, patients should be placed on Droplet Precautions.

28. Healthcare staff must wear personal respirators whenever they enter the room of a patient on:
- a. Droplet Precautions
 - b. Contact Precautions
 - c. Airborne Precautions
 - d. Standard Precautions

Correct: Airborne Precautions

Rationale: Airborne Precautions require the use of personal respirators.