

Maintaining a Safe Environment

Maintaining a safe environment refers to the precautions and considerations required to ensure that physical environments are safe for clients and staff. **Qs**

Knowing how to maintain client safety has been identified by the Institute of Medicine as a competency that graduates of nursing programs must possess.

Quality and Safety Education for Nurses (QSEN) faculty propose that nursing education focus not only on the knowledge needed to provide safe care but also on the skills and attitudes that accompany this competency.

To maintain a safe environment, nurses must have knowledge, skills, and attitudes about QSEN competencies, handling infectious and hazardous materials, safe use of equipment, accident and injury prevention, home safety, and ergonomic principles.

QSEN competencies in nursing programs

Concern about the quality and safety of health care in the U.S. has prompted numerous reports and initiatives designed to address this issue. Data from the Joint Commission identify poor communication as a key factor in the majority of sentinel events. The Institute of Medicine (IOM) report *To Err is Human: Building a Safer Health System* (1999) spoke to the frequency of unnecessary deaths and preventable medical errors, and identified system failure as a major factor. Subsequent publications pointed to the need to redesign the provision of client care and improve education of students in health care programs.

The QSEN project identified specific competencies to include in each prelicensure nursing curriculum. These six competencies are now integral components of the curriculum of many nursing programs in the U.S.

Q_{PCC} PATIENT-CENTERED CARE: The provision of caring and compassionate, culturally sensitive care that addresses clients' physiological, psychological, sociological, spiritual, and cultural needs, preferences, and values.

Q_{TC} TEAMWORK AND COLLABORATION: The delivery of client care in partnership with multidisciplinary members of the health care team to achieve continuity of care and positive client outcomes.

Q_{EBP} EVIDENCE-BASED PRACTICE: The use of current knowledge from research and other credible sources on which to base clinical judgment and client care.

Q_{QI} QUALITY IMPROVEMENT: Care-related and organizational processes that involve the development and implementation of a plan to improve health care services and better meet clients' needs.

Q_S SAFETY: The minimization of risk factors that could cause injury or harm while promoting quality care and maintaining a secure environment for clients, self, and others.

Q_I INFORMATICS: The use of information technology as a communication and information-gathering tool that supports clinical decision-making and scientifically-based nursing practice.

Handling infectious and hazardous materials

- Handling infectious and hazardous materials refers to infection control procedures and to precautions for handling toxic, radioactive, or other hazardous materials. **Qs**
- Safety measures are taken to protect the client, nurse, and other personnel and individuals from harmful materials and organisms.
- Four levels of precautions (standard, airborne, droplet, contact) are recommended for individuals coming in contact with clients carrying infectious organisms. Precautions consistent with the infectious organism should be followed as indicated.
- A manual containing safety data sheets (SDSs) should be available in every workplace and provide safety information, such as level of toxicity, handling and storage guidelines, and first aid and containment measures to take in case of accidental release of toxic, radioactive, or other dangerous materials. This manual should be available to all employees and can be housed in a location such as the emergency department of a hospital.

INFECTION CONTROL

Infection control is extremely important to prevent cross-contamination of communicable organisms and health care-associated infections.

- Staff education on infection prevention and control is a responsibility of the nurse.
- Facility policies and procedures should serve as a resource for proper implementation of infection prevention and control.
- Clients suspected of or known to have a communicable disease should be placed in the appropriate form of isolation.
- The nurse should ensure that appropriate equipment is available and that isolation procedures are properly carried out by all health care team members.
- Use of standard precautions by all members of the health care team should be enforced. Employees who are allergic to latex should have non-latex gloves (e.g., nitrile or vinyl) made available to them. A latex-free environment is provided for clients who have a latex allergy. Many facilities avoid the use of latex products unless there is no other alternative.
- Hand hygiene facilities, as well as hand sanitizer, must be readily accessible to employees in client care areas.
- Sturdy, moisture-resistant bags (usually red) should be used for soiled items, and the bags should be tied securely with a knot at the top. Double-bagging is not cost-effective and is unnecessary unless the outside of a bag becomes contaminated.

- Retractable needles or needles with capping mechanisms, needleless syringes, and IV tubing with needleless connections should be available for use to prevent accidental needlesticks. Education on how to safely use these devices for administration of intermittent infusions will prevent misuse during client care and staff injuries from improper manipulation.
- Sharps containers should be readily available in client care areas, and any needlestick involving an employee should be reported in accordance with facility policy and state law. An incident or occurrence report should also be filed. Most policies include testing of the client and nurse for blood-borne illnesses such as hepatitis and human immunodeficiency virus (HIV).

HAZARDOUS MATERIALS

- Nurses and other members of the health care team are at risk for exposure to hazardous materials.
- Employees have the right to refuse to work in hazardous working conditions if there is a clear threat to their health.
- Health care team members should follow occupational safety and health guidelines as set by the Occupational Safety and Health Administration (OSHA).
 - Provide each employee a work environment that is free from recognized hazards that can cause or are likely to cause death or serious physical harm.
 - Make protective gear accessible to employees working under hazardous conditions or with hazardous materials (antineoplastic medications, sterilization chemicals).
 - Provide measurement devices and keeping records that document an employee's level of exposure over time to hazardous materials, such as radiation from x-rays.
 - Provide education and recertification opportunities to each employee regarding these rules and regulations, such as handling of hazardous materials.
 - Maintain SDSs and ensure their availability to all employees.
 - Designate an institutional hazardous materials (HAZMAT) response team that responds to hazardous events.

HANDLING INFECTIOUS AND HAZARDOUS MATERIALS

- Members of the health care team must clean and maintain equipment that is shared by clients on a unit (blood pressure cuffs, thermometers, pulse oximeters).
- Keep designated equipment in the rooms of clients who are on contact precautions.
- Use standard precautions at all times.
- Employ proper hand hygiene techniques.
- Use needlestick precautions when handling needles and sharps.
- Maintain knowledge of rules and regulations and proper procedures for handling infectious/hazardous materials (use of red biohazard bag for disposal of contaminated materials, use of puncture-proof containers for sharps).

Safe use of equipment

- Safe use of equipment refers to appropriate operation of health care–related equipment by trained staff. Equipment–related injuries can occur as a result of malfunction, disrepair, or mishandling of mechanical equipment. **Qs**
- Nurses must ensure that they have the competence necessary to use equipment for tasks that fall within their scope of practice. Nurses should use equipment only after receiving sufficient instruction.
- Equipment should be regularly inspected by the engineering or maintenance department and by the user prior to use. Faulty equipment (frayed cords, disrepair) can start a fire or cause an electrical shock and should be removed from use and reported immediately per agency policy.

Nurses' responsibilities related to equipment safety

- Learning how to use and maintaining competency in the use of equipment
- Checking that equipment is accurately set and functioning properly (oxygen, nasogastric suction) at the beginning and during each shift
- Ensuring that electrical equipment is grounded (three-pronged plug and grounded outlet) to decrease the risk for electrical shock
- Ensuring that outlet covers are used in environments with individuals at risk for sticking items into them
- Unplugging equipment using the plug, not the cord, to prevent bending the plug prongs, which increases the risk for electrical shock
- Ensuring that life-support equipment is plugged into outlets designated to be powered by a backup generator during power outages
- Disconnecting all electrical equipment prior to cleaning
- Ensuring that all pumps (general and PCA) have free-flow protection to prevent an overdose of fluids or medications
- Ensuring that outlets are not overcrowded and that extension cords are used only when absolutely necessary (if they must be used in an open area, tape the cords to the floor)
- Using all equipment only as it is intended
- Immediately removing nonworking equipment from the client care area and sending it to the proper department for repair or disposal

Accident and injury prevention

- Preventing injury is a major nursing responsibility. Many factors affect a client's ability to protect himself. **Qs**
 - Age (pediatric and older adult clients are at greater risk)
 - Mobility
 - Cognitive and sensory awareness
 - Emotional state
 - Lifestyle and safety awareness
- All health care workers must be aware of the following.
 - How to assess for and recognize clients at risk for safety issues
 - Procedural safety guidelines
 - Protocols for responding to dangerous situations
 - Security plans
 - Identification and documentation of incidents and responses per health care agency policy

FALLS

Prevention of client falls is a major nursing priority. Nurses should assess all clients admitted to health care facilities for risk factors related to falls. Based on assessment findings, the nurse should implement preventative measures.

- Older adult clients can be at an increased risk for falls due to decreased strength, impaired mobility and balance, endurance limitations, and decreased sensory perception. **Qs**
- Other risk factors include decreased visual acuity, generalized weakness, orthopedic problems (diabetic neuropathy), urinary frequency, gait and balance problems (Parkinson's disease, osteoporosis, arthritis), and cognitive dysfunction. Adverse effects of medications (orthostatic hypotension, drowsiness) also can increase the risk for falls.
- Clients are at greater risk for falls when multiple risk factors are present.

PREVENTION OF FALLS **Qs**

- Complete a fall risk assessment on the client upon admission and at regular intervals.
- The plan for each client is individualized based on the fall risk assessment findings.
- For example, if the client has orthostatic hypotension, instruct the client to avoid getting up too quickly, to sit on the side of the bed for a few seconds prior to standing, and to stand at the side of the bed for a few seconds prior to walking.

GENERAL MEASURES TO PREVENT FALLS

- Be sure the client knows how to use the call light, that it is in reach, and encourage its use.
- Respond to call lights in a timely manner.
- Orient the client to the setting (grab bars, call light), and ensure that the client understands how to use all assistive devices and can locate necessary items.
- Place clients at risk for falls near the nursing station.
- Ensure that bedside tables and overbed tables and frequently used items (telephone, water, tissues, call light) are within the client's reach.
- Maintain the bed in low position.
- Keep bed rails up and the bed in the low position for clients who are sedated, unconscious, or otherwise compromised.
- Avoid using full side bed rails for clients who get out of bed or attempt to get out of bed without assistance.
- Provide the client with nonskid footwear.
- Keep the floor free from clutter with a clear path to the bathroom (no scatter rugs, cords, furniture).
- Ensure adequate lighting
- Keep assistive devices (glasses, walkers, transfer devices) nearby after validation of safe use by the client and family.
- Educate the client and family/caregivers on identified risks and the plan of care.
- Lock wheels on beds, wheelchairs, and carts to prevent the device from rolling during transfers or stops.
- Use chair or bed sensors to alert staff of independent ambulation for clients at risk for getting up unattended.
- Report and document all incidents per agency policy. This provides valuable information that can be helpful in preventing similar incidents.
- To evaluate incidence of client falls, a formula based on 1,000 client days can be used. Using this formula, a facility can compare its fall rates to other facilities.

(Number of client falls ÷ number of client days)
× 1,000 = fall rate per 1,000 client days

SEIZURES

A seizure is a sudden surge of electrical activity in the brain. Seizures can occur at any time during a person's life and can be due to epilepsy, fever, or a variety of medical conditions. Partial seizures are due to electrical surges in one part of the brain, and generalized seizures involve the entire brain.

SEIZURE PRECAUTIONS

Seizure precautions (measures to protect the client from injury should a seizure occur) are taken for clients who have a history of seizures that involve the entire body or result in unconsciousness. **Qs**

- Ensure that rescue equipment, including oxygen, an oral airway, and suction equipment, is at the bedside. A saline lock can be placed for intravenous access if the client is at high risk for experiencing a generalized seizure.
- Inspect the client's environment for items that can cause injury in the event of a seizure, and remove items that are not necessary for current treatment.
- Assign the client to a room close to the nurses' station
- Assist the client who is at risk for a seizure with ambulation and transfers to reduce the risk of injury.
- Advise all caregivers and family not to put anything in the client's mouth in the event of a seizure.
- Advise all caregivers and family not to restrain the client in the event of a seizure. Instead, ensure safety by lowering the client to the floor if he is not in bed, protecting his head, removing nearby furniture, providing privacy, putting him on his side with his head slightly flexed forward if possible, and loosening clothing to prevent injury and promote dignity.
- In the event of a seizure, stay with the client, protect the client from injury, and call for help.
- Note the duration of the seizure and the sequence and type of movement.
- After a seizure, explain what happened to the client, and provide comfort, understanding, and a quiet environment for recovery.
- Document the seizure in the client's record along with any precipitating behaviors and a description of the event (movements, any injuries, length of seizure, aura, postictal state), and report it to the provider.

SECLUSION AND RESTRAINTS

Seclusion and restraints are used to prevent clients from injuring themselves or others.

- Seclusion is the placement of a client in a room that is private, isolated, and safe. Seclusion is used for clients who are at risk for injuring themselves or others.
- Physical restraint involves the application of a device that limits the client's movement. A restraint can limit the movement of the entire body or a body part.
- Chemical restraints are medications used to control the client's disruptive behavior.

RISKS ASSOCIATED WITH RESTRAINTS Qs

- Deaths by asphyxiation and strangulation have occurred with restraints.
- The client can also experience complications related to immobility, such as pressure ulcers, urinary and fecal incontinence, and pneumonia.

LEGAL CONSIDERATIONS

- Nurses should understand agency policies as well as federal and state laws that govern the use of restraints and seclusion.
- False imprisonment means the confinement of person without his consent. Improper use of restraints can subject the nurse to charges of false imprisonment.

GUIDELINES

- In general, seclusion and restraints should be prescribed for the shortest duration necessary and only if less restrictive measures have proved insufficient. They are for the physical protection of the client, or the protection of other clients or staff.
- Use of restraints is a difficult adjustment for the client and family. The client loses his freedom and can be embarrassed and experience low self-esteem and depression. The nurse can allay some of the concerns by explaining the purpose of the restraint and that the restraint is only temporary.
- Seclusion and/or restraints must never be used for
 - Convenience of the staff.
 - Punishment for the client.
 - Clients who are extremely physically or mentally unstable.
 - Clients who cannot tolerate the decreased stimulation of a seclusion room.
- PRN prescriptions for restraints are not permitted.

- Restraints should
 - Never interfere with treatment.
 - Restrict movement as little as is necessary to ensure safety.
 - Fit properly.
 - Be easily changed to decrease the chance of injury and to provide for the greatest level of dignity.
- When all other less restrictive means have been tried to prevent a client from harming self or others, the following must occur for seclusion or restraints to be used.
 - The treatment must be prescribed by the provider based on a face-to-face assessment of the client. In an emergency situation in which there is immediate risk to the client or others, the nurse can place a client in restraints. The nurse must obtain a prescription from the provider as soon as possible in accordance with agency policy (usually within 1 hr).
 - The prescription must specify the reason for the restraint, the type of restraint, the location of the restraint, how long the restraint can be used, and the type of behaviors demonstrated by the client that warrant use of the restraint.
 - The provider must rewrite the prescription, specifying the type of restraint, every 24 hr or the frequency of time specified by facility policy.

NURSING RESPONSIBILITIES

Obtain a prescription from the provider for the restraint.

If the client is at risk for harming self or others and a restraint is applied prior to consulting the provider, ensure that notification of the provider occurs in accordance with facility protocol.

- Conduct neurosensory checks every 2 hr or according to facility policy to include:
 - Circulation
 - Sensation
 - Mobility
- Offer food and fluids.
- Provide with means for hygiene and elimination.
- Monitor vital signs.
- Provide range of motion of extremities.
- Follow agency policies regarding restraints, including the need for signed consent from the client or guardian.
- Review the manufacturer's instructions for correct application.
- Remove or replace restraints frequently.
- Pad bony prominences.
- Use a quick-release knot to tie the restraint to the bed frame.
- Ensure that the restraint is loose enough for range of motion and has enough room to fit two fingers between the device and the client.
- Regularly assess the need for continued use of restraints.
- Never leave the client unattended without the restraint.

DOCUMENTATION

- Behavior or precipitating events that make the restraint necessary
- Attempts to use alternatives to restraints and the client's response
- Level of consciousness
- Type of restraint used and location
- Education/explanations to the client and family
- Exact time of application and removal
- Client behavior while restrained
- Type and frequency of care (range of motion, neurosensory checks, removal, integumentary checks)
- The client's response when the restraint is removed
- Medication administration

FIRE SAFETY

Fires in health care facilities are usually due to problems related to electrical or anesthetic equipment. Unauthorized smoking can also be the cause of a fire.

All staff must:

- Know the location of exits, alarms, fire extinguishers, and oxygen turnoff valves.
- Make sure equipment does not block fire doors.
- Know the evacuation plan for the unit and the facility.

Fire response follows the RACE sequence

R: Rescue and protect clients in close proximity to the fire by moving them to a safer location. Clients who are ambulatory may walk independently to a safe location.

A: Alarm: Activate the facility's alarm system and then report the fire's details and location.

C: Confine the fire by closing doors and windows and turning off any sources of oxygen and any electrical devices. Ventilate clients who are on life support with a bag-valve mask.

E: Extinguish the fire if possible using the appropriate fire extinguisher.

FIRE EXTINGUISHERS

To use a fire extinguisher, use the PASS sequence.

P: Pull the pin.

A: Aim at the base of the fire.

S: Squeeze the handle.

S: Sweep the extinguisher from side to side, covering the area of the fire.

Classes of fire extinguishers

Class A is for combustibles such as paper, wood, upholstery, rags, and other types of trash fires.

Class B is for flammable liquids and gas fires.

Class C is for electrical fires.

Home safety

In addition to taking measures to prevent injury to clients in a health care setting, nurses play a pivotal role in promoting safety in the client's home and community. Nurses often collaborate with the client, family, and members of the interprofessional team (social workers, occupational therapists, physical therapists) to promote client safety. **Qs**

Many factors contribute to the client's risk for injury.

- Age and developmental status
- Mobility and balance
- Knowledge about safety hazards
- Sensory and cognitive awareness
- Communication skills
- Home and work environment
- Community
- Medical and pharmacological status

To initiate a plan of care, the nurse must identify risk factors using a risk assessment tool and complete a nursing history, physical examination, and home hazard appraisal.

SAFETY RISKS BASED ON AGE AND DEVELOPMENTAL STATUS

- The age and developmental status of the client create specific safety risks. **Qpcc**
- Infants and toddlers are at risk for injury due to a tendency to put objects in their mouth and from hazards encountered while exploring their environment.
- Preschool- and school-age children often face injury from limited or underdeveloped motor coordination.
- Adolescents' risks for injury can stem from increased desire to make independent decisions, and relying on peers for guidance rather than family.
- Some of the accident prevention measures for specific age groups are found below.

INFANTS AND TODDLERS

Aspiration

- Keep all small objects out of reach.
- Check toys and objects for loose or small parts and sharp edges.
- Follow manufacturer recommendations for age appropriateness of toys.
- Do not feed the infant hard candy, peanuts, popcorn, or whole or sliced pieces of hot dog.
- Cut or break food that is age-appropriate into small bite-size pieces.
- Do not place the infant in the supine position while feeding or prop the infant's bottle.
- A pacifier (if used) should be constructed of one piece and never placed on string or ribbon around the neck.

Suffocation

- Teach “back to sleep” mnemonic and always place infants on back to rest.
- Keep plastic bags out of reach.
- Make sure crib mattress fits snugly and that crib slats are no more than 2 3/8 inches apart.
- Teach parents that it is recommended for infants to sleep in a crib or bassinet. Co-sleeping in bed with parents increases the risk for injury.
- Never leave an infant or toddler unattended in the bathtub.
- Do not place anything in crib with infant.
- Remove crib toys, such as mobiles, from over the bed as soon as the infant begins to push up.
- Keep latex balloons away from infants and toddlers.
- Fence swimming pools and use a locked gate.
- Begin swimming lessons when the child’s developmental status allows for protective responses, such as closing her mouth under water.
- Teach caregivers CPR and Heimlich maneuver.
- Keep toilet lids down and bathroom doors closed.

Poisoning

- Keep houseplants and cleaning agents out of reach.
- Inspect and remove sources of lead, such as paint chips, and provide parents with information about prevention of lead poisoning.
- Place poisons, paint, and gasoline in locked cabinet.
- Keep medications in child-proof containers and locked up.
- Properly dispose of medications that are no longer used or are out of date.

Falls

- Keep crib and playpen rails up.
- Never leave the infant unattended on a changing table or other high surface.
- Use gates on stairs, and ensure windows have screens.
- Restrain according to manufacturer’s recommendations and supervise when in high chair, swing, stroller, etc. Discontinue use when the infant or toddler outgrows size limits.
- Place in a low bed when toddler starts to climb.

Motor vehicle injury

- Place infants and toddlers in a rear-facing car seat until 2 years of age or until they exceed the height and weight limit of the car seat. They can then sit in a forward-facing car seat.
- Use a car seat with a five-point harness for infants and children.
- All car seats should be federally approved and be placed in the back seat.

Burns

- Test the temperature of formula and bath water.
- Place pots on back burner and turn handle away from front of stove.
- Supervise the use of faucets.
- Keep matches and lighters out of reach.
- Cover electrical outlets.

PRESCHOOLERS AND SCHOOL-AGE CHILDREN

Drowning

- Be sure child has learned to swim and knows rules of water safety.
- Place locked fences around home and neighborhood pools.
- Provide supervision near pools or water.
- Teach to never swim alone and to wear a life jacket in boats.

Motor vehicle injury

- Use booster seats for children who are less than 4 feet 9 inches tall and weigh less than 40 lb (usually 4 to 8 years old). The child should be able to sit with his back against the car seat, and his legs should dangle over the seat.
- If car has a passenger air bag, place children under 12 years in the back seat.
- Use seat belts properly after booster seats are no longer necessary.
- Use protective equipment when participating in sports, riding a bike, or riding as a passenger on a bike.
- Supervise and teach safe use of equipment.
- Teach the child to play in safe areas and never to run after a ball or toy that goes into a road.
- Teach the child safety rules of the road.

Sex education: Begin sex education for school-age child.

Firearms

- Keep firearms unloaded, locked up, and out of reach.
- Teach to never touch a gun or stay at a friend’s house where a gun is accessible.
- Store bullets in a different location from guns.

Play injury

- Teach to not run with candy or objects in mouth.
- Remove doors from refrigerators or other potentially confining structures.
- Ensure that bikes are the appropriate size for child.
- Teach playground safety.
- Teach to play in safe areas, and avoid heavy machinery, railroad tracks, excavation areas, quarries, trunks, and vacant buildings.
- Teach to avoid strangers and keep parents informed of strangers.

Burns

- Reduce setting on water heater to no higher than 49° C (120° F).
- Teach dangers of playing with matches, fireworks, and firearms.
- Teach school-age child how to properly use microwave and other cooking instruments.

Poison

- Teach child about the hazards of alcohol, cigarettes, and prescription, non-prescription, and illegal substances.
- Keep potentially dangerous substances out of reach.
- Teach parents to have the nationwide poison control number near every phone in the home and programmed in each cell phone (1-800-222-1222).

ADOLESCENTS

Motor vehicle and injury

- Ensure the teen has completed a driver's education course.
- Set rules on the number of people allowed to ride in cars, seat belt use, and to call for a ride home if a driver is impaired.
- Educate on the hazards of driving while distracted (eating or drinking, making phone calls or texting).
- Reinforce teaching on proper use of protective equipment when participating in sports.
- Teach about the hazards of firearms and safety precautions with firearms.
- Teach water safety.
- Teach to check water depth before diving.
- Be alert to indications of depression, anxiety or other behavioral changes.
- Educate on the hazards of smoking, alcohol, legal and illegal substances, and unprotected sex.
- Discuss dangers of social networking and the Internet.

Burns

- Teach to use sunblock and protective clothing.
- Teach the dangers of sunbathing and tanning beds.

YOUNG AND MIDDLE-AGE ADULTS

Motor vehicle crashes are a leading cause of death and injury to adults. Occupational injuries contribute to the injury and death rate of adults. High consumption of alcohol and suicide are also major concerns for adults.

CLIENT EDUCATION

- Remind clients to drive defensively and to not drive after drinking alcohol.
- Reinforce teaching about the long-term effects related to high alcohol consumption.
- Ensure home safety with smoke and carbon monoxide detectors, fire alarms, well-lit and uncluttered staircases.
- Be attuned to behaviors that suggest the presence of depression or thoughts of suicide. Referring clients as appropriate and encourage counseling.
- Teach diving and water safety.
- Encourage clients to become proactive about safety in the workplace and in the home.
- Discuss dangers of social networking and the Internet.
- Ensure that clients understand the hazards of excessive sun exposure and the need to protect the skin with the use of sun-blocking agents and protective clothing.

OLDER ADULTS

- The rate at which age-related changes occur varies greatly among older adults. ⑥
- Many older adults are able to maintain a lifestyle that promotes independence and the ability to protect themselves from safety hazards.
- Prevention is important because elderly clients can have longer recovery times from injuries and are at an increased risk for complications from injuries.
- A decrease in tactile sensitivity can place the client at risk for burns and other types of tissue injury.
- When the client demonstrates factors that increases the risk for injury (regardless of age), a home hazard evaluation should be conducted by a nurse, physical therapist, and/or occupational therapist. The client is made aware of the environmental factors that can pose a risk to safety and suggested modifications to be made.

RISK FACTORS FOR FALLS IN OLDER ADULTS

- Physical, cognitive, and sensory changes
- Changes in the musculoskeletal and neurological systems
- Impaired vision and/or hearing
- Frequent trips to the bathroom at night because of nocturia and incontinence

MODIFICATIONS TO IMPROVE HOME SAFETY

- Remove items that could cause the client to trip, such as throw rugs and loose carpets.
- Place electrical cords and extension cords against a wall behind furniture.
- Monitor gait and balance, and provide aids as needed.
- Make sure that steps and sidewalks are in good repair.
- Place grab bars near the toilet and in the tub or shower, and install a stool riser.
- Use a nonskid mat in the tub or shower.
- Wear nonskid footwear.
- Place a shower chair in the shower and provide a bedside commode if needed.
- Ensure that lighting is adequate inside and outside the home.

HOME SAFETY PLAN

FIRE

Home fires continue to be a major cause of death and injury for people of all ages. Nurses should educate clients about the importance of a home safety plan.

- Keep emergency numbers near the phone for prompt use in the event of an emergency of any type.
- Ensure that the number and placement of fire extinguishers and smoke alarms are adequate and that they are operable.
- Install and maintain smoke alarms in the home on every floor and near all rooms family members sleep in
- Set a time to routinely change the batteries in the smoke alarms (in the fall when the clocks are set to standard time and spring when set at daylight saving time).
- Have a family exit and meeting plan for fires that is reviewed and practiced regularly.
- Be sure to close windows and doors if able.
- Exit a smoke-filled area by covering the mouth and nose with a damp cloth and getting down as close to the floor as possible.
- Review with clients of all ages that in the event that the clothing or skin is on fire “stop, drop, and roll” to extinguish the fire.

SAFE USE OF OXYGEN IN THE HOME

If oxygen is used in the home, oxygen safety measures should be reviewed. Oxygen can cause materials to combust more easily and burn more rapidly, so the client and family must be provided with information on use of the oxygen delivery equipment and the dangers of combustion.

- Use and store oxygen equipment according to the manufacturer’s recommendations.
- Place a “No Smoking” sign in a conspicuous place near the front door of the home. A sign can also be placed on the door to the client’s bedroom.
- Inform the client and family of the danger of smoking in the presence of oxygen. Family members and visitors who smoke should do so outside the home.
- Ensure that electrical equipment is in good repair and well grounded.
- Replace bedding that generates static electricity (wool, nylon, synthetics) with items made from cotton.
- Keep flammable materials, such as heating oil and nail polish remover, away from the client when oxygen is in use.
- Follow general measures for fire safety in the home, such as having a fire extinguisher readily available and an established exit route should a fire occur.

ADDITIONAL RISKS IN THE HOME AND COMMUNITY

Additional risks in the home and community include passive smoking, carbon monoxide poisoning, and food poisoning. Bioterrorism has also become a concern, making disaster plans a mandatory part of community safety. Nurses should teach clients about the dangers of these additional risks.

Passive smoking

Passive smoking (secondhand smoke) is the unintentional inhalation of tobacco smoke.

- Exposure to nicotine and other toxins places people at risk for numerous diseases, including cancer, heart disease, and lung infections.
- Low birth weight, prematurity, stillbirths, and sudden infant death syndrome (SIDS) have been associated with maternal smoking.
- Passive smoking is associated with childhood development of bronchitis, pneumonia, and middle ear infections.
- For children who have asthma, exposure to passive smoke can result in an increase in the frequency and the severity of asthma attacks.

CLIENT EDUCATION

Nurses should inform clients who smoke and their families about the following.

- Hazards of smoking
- Resources to stop smoking (smoking-cessation programs, medication support, self-help groups)
- Effect that visiting individuals who smoke or riding in the automobile of a smoker has on a nonsmoker

Carbon monoxide

- Carbon monoxide is a very dangerous gas because it binds with hemoglobin and ultimately reduces the oxygen supplied to tissues in the body.
- Carbon monoxide cannot be seen, smelled, or tasted.
- Indications of carbon monoxide poisoning include nausea, vomiting, headache, weakness, and unconsciousness.
- Death can occur with prolonged exposure.
- Measures to prevent carbon monoxide poisoning include ensuring proper ventilation when using fuel-burning devices (lawn mowers, wood-burning and gas fireplaces, charcoal grills).
- Gas-burning furnaces, water heaters, and appliances should be inspected annually.
- Flues and chimneys should be unobstructed.
- Carbon monoxide detectors should be installed in homes and inspected regularly.
- Set a specific time to routinely change the batteries in carbon monoxide alarms.

Food poisoning

- Food poisoning is a major cause of illness in the U.S.
- Most food poisoning is caused by some bacteria, such as *Escherichia coli*, *Listeria monocytogenes*, and *salmonella*.
- Healthy individuals usually recover from the illness in a few days.
- Very young, very old, pregnant, and immunocompromised individuals are at risk for complications.
- Clients who are especially at risk are instructed to follow a low-microbial diet.
- Most food poisoning occurs because of unsanitary food practice.
- Proper hand hygiene; ensuring that eggs, meat and fish are cooked to the correct temperature; handling raw and cooked food separately to avoid cross-contamination; not using the same container, cutting board, or utensils for raw and cooked foods; refrigerating perishable items; washing raw fruits and vegetables before peeling, cutting, or eating; and not consuming unpasteurized dairy products or untreated water are measures that can prevent food poisoning.

Bioterrorism

- Bioterrorism is the dissemination of harmful toxins, bacteria, viruses, or pathogens for the purpose of causing illness or death.
- Anthrax, variola major (smallpox), *Clostridium botulinum*, *Yersinia pestis* (plague), and ricin toxin are examples of agents used by terrorists.
- Nurses and other health professionals must be prepared to respond to an attack by being proficient in early detection, recognizing the causative agent, identifying the affected community, and providing early treatment to affected people. For more information, go to the website of the Association of Professionals in Infection Control and Epidemiology (www.apic.org).

Ergonomic principles

Ergonomics are the factors or qualities in an object's design and/or use that contribute to comfort, safety, efficiency, and ease of use. **Qs**

- Body mechanics is the proper use of muscles to maintain balance, posture, and body alignment when performing a physical task. Nurses use body mechanics when providing care to clients by lifting, bending, and carrying out the activities of daily living.
- The risk of injury to the client and the nurse is reduced with the use of good body mechanics. Whenever possible, mechanical lift devices should be used to lift and transfer clients. Many health care agencies have "no manual lift" and "no solo lift" policies.

GUIDELINES TO PREVENT INJURY

- Know your agency's policies regarding lifting.
- Plan ahead for activities that require lifting, transfer, or ambulation of a client, and ask other staff members to be ready to assist at the time planned.
- Be aware that the safest way to lift a client can be with the use of assistive equipment.
- Rest between heavy lifting activities to decrease muscle fatigue.
- Maintain good posture and exercise regularly to increase the strength of arm, leg, back, and abdominal muscles so these activities require less energy.
- Use smooth movements when lifting and moving clients to prevent injury through sudden or jerky muscle movements.
- When standing for long periods of time, flex the hip and knee through use of a foot rest. When sitting for long periods of time, keep the knees slightly higher than the hips.
- Avoid repetitive movements of the hands, wrists, and shoulders. Take a break every 15 to 20 min to flex and stretch joints and muscles.
- Maintain good posture (head and neck in straight line with pelvis) to avoid neck flexion and hunched shoulders, which can cause impingement of nerves in the neck.
- Avoid twisting the spine or bending at the waist (flexion) to minimize the risk for injury.

Center of gravity

- The center of gravity is the center of a mass.
- Weight is a quantity of matter acted on by the force of gravity.
- To lift an object, the nurse must overcome the weight of the object and know the center of gravity of the object.
- When the human body is in the upright position, the center of gravity is the pelvis.
- When an individual moves, the center of gravity shifts.
- The closer the line of gravity is to the center of the base of support, the more stable the individual is.
- To lower the center of gravity, bend the hips and knees.

Lifting

- Use the major muscle groups to prevent back strain, and tighten the abdominal muscles to increase support to the back muscles.
- Distribute the weight between the large muscles of the arms and legs to decrease the strain on any one muscle group and avoid strain on smaller muscles.
- When lifting an object from the floor, flex the hips, knees, and back. Get the object to thigh level keeping the knees bent and straightening the back. Stand up while holding the object as close as possible to the body, bringing the load to the center of gravity to increase stability and decrease back strain.
- Use assistive devices whenever possible, and seek assistance whenever it is needed.

Pushing or pulling a load

- Widen the base of support.
- When opportunity allows, pull objects toward the center of gravity rather than pushing away.
- If pushing, move the front foot forward. If pulling, move the rear leg back to promote stability.
- Face the direction of movement when moving a client.
- Use own body as a counterweight when pushing or pulling, which makes the movement easier.
- Sliding, rolling, and pushing require less energy than lifting and have less risk for injury.
- Avoid twisting the thoracic spine and bending the back while the hips and knees are straight.

Transfers and use of assistive devices

- Assess the client's ability to help with transfers (balance, muscle strength, endurance).
- Determine the need for additional personnel or assistive devices (transfer belt, hydraulic lift, sliding board).
- Assess and monitor the client's use of mobility aids (canes, walkers, crutches).
- Include assistance or mobility aids needed for safe transfers and ambulation in plan of care.

Use of computers for electronic medical records

- Complete training to safely use computer and support equipment.
- Use adequate lighting.
- If adjustable, position laptop to appropriate height to be able to sit or stand while accessing or inputting data.

Application Exercises

1. A home health nurse is assessing the safety of a client's home. The nurse should identify which of the following factors as increasing the client's risk for falls? (Select all that apply.)
 - A. History of a previous fall
 - B. Reduced vision
 - C. Impaired memory
 - D. Takes rosuvastatin
 - E. Uses a night light
 - F. Kyphosis
2. A nurse on an acute care unit is caring for a client following a total hip arthroplasty. The client is confused, is moving his leg into positions that could dislocate the new hip joint, and he repeatedly attempts to get out of bed. After determining that restraint application is indicated, which of the following actions should the nurse take? (Select all that apply.)
 - A. Secure the restraint to the frame of the bed.
 - B. Get an prescription for restraints from the provider.
 - C. Have a family member sign the consent for restraints.
 - D. Use a square knot to secure the restraints to the bed.
 - E. Ensure that only one finger can be inserted between the restraint and the client.
3. A nurse is observing a newly licensed nurse and an assistive personnel (AP) pull a client up in bed using a drawsheet. Which of the following actions by the newly licensed nurse indicates an understanding of this technique?
 - A. The nurse stands with his feet together.
 - B. The nurse uses his body weight to counter the client's weight.
 - C. The nurse's feet are facing inward, toward the center of the bed.
 - D. The nurse uses the muscles in his back to lift the client off the bed using the drawsheet.
4. A nurse is caring for a client who has diabetes mellitus and had a morning blood glucose level of 285 mg/dL. An assistive personnel (AP) reports that a client's finger-stick blood glucose reading 30 min before lunch is 58 mg/dL. Which of the following actions should the nurse take?
 - A. Recheck the client's blood glucose.
 - B. Complete a facility incident report.
 - C. Inform the AP to give the client 120 mL of orange juice.
 - D. Administer insulin as prescribed.
5. A nurse is reviewing the hospital's fire safety policies and procedures with newly hired assistive personnel. The nurse is describing what to do when there is a fire in a client's trash can. Which of the following information should the nurse include? (Select all that apply.)
 - A. The first step is to pull the alarm.
 - B. Use a Class C fire extinguisher to put out the fire.
 - C. Instruct ambulatory clients to evacuate to a safe place.
 - D. Pull the pin on the fire extinguisher prior to use.
 - E. Close all doors.

PRACTICE Active Learning Scenario

A nurse manager is preparing to discuss electrical safety with the nurses on her unit. List the information that should be included in the discussion for each of the following aspects of safety. Use the ATI Active Learning Template: Basic Concept to complete this item.

UNDERLYING PRINCIPLES

- Identify the frequency in which the nurse should check equipment.
- List four measures to prevent electrical shock.

Application Exercises Key

1. A. **CORRECT:** A client who has had a previous fall is at an increased risk for another fall.
B. **CORRECT:** Reduced vision increases the client's risk for tripping over equipment and furniture.
C. **CORRECT:** A client who has impaired memory is at an increased risk for falls due to not asking for help with ambulation or ADLs.
D. This medication does not place the client at risk for falls.
E. The use of night lights and adequate lighting decreases the risk for falls.
F. **CORRECT:** Kyphosis, which is a type of curvature of the spine, alters the client's posture and center of balance and can place the client at risk for falls.
N NCLEX® Connection: Safety and Infection Control, Home Safety
2. A. **CORRECT:** The nurse should secure the restraint to an immovable part of the bed such as the bed frame.
B. **CORRECT:** The nurse must obtain a prescription from the provider as soon as possible, typically within 1 hr.
C. **CORRECT:** The client's advocate or relative is legally required to be notified for the use of a restraint.
D. A quick-release knot must be used to secure the restraint.
E. The distance between the restraint and the client should be two finger widths.
N NCLEX® Connection: Safety and Infection Control, Use of Restraints/Safety Devices
3. A. When the nurse pulls a client up in bed, he should spread his legs apart to create a wide base of support.
B. **CORRECT:** The nurse should use his body weight to counter the client's weight to make pulling easier.
C. The nurse's feet should point at the head of the bed instead of the center of the bed.
D. The nurse should use the larger muscles of the arm to lift the client.
N NCLEX® Connection: Management of Care, Assignment, Delegation and Supervision
4. A. **CORRECT:** Because the blood glucose was 285 mg/dL a few hours ago, it is unlikely that the blood glucose is 58 mg/dL at this time. The nurse should recalibrate the glucometer and recheck the client's blood glucose.
B. It is not necessary for the nurse to complete an incident report for a change in the client's blood glucose level.
C. Because the blood glucose was high a few hours ago, it is unlikely that the blood glucose is low enough to warrant giving the client orange juice. The nurse should assess the client prior to administering a simple carbohydrate.
D. The nurse should avoid administering insulin to a client who has a blood glucose level of 58 mg/dL.
N NCLEX® Connection: Safety and Infection Control, Safe Use of Equipment
5. A. When a fire occurs in a client's room, the first step for the employee to take is to remove or evacuate the client from the room. The employee should know the RACE sequence: rescue the client, pull the alarm, confine the fire, and then extinguish the fire.
B. Class A fire extinguishers are used for paper, wood, and cloth.
C. **CORRECT:** Ambulatory clients can walk by themselves to a safe place.
D. **CORRECT:** The fire extinguisher PASS sequence is pull the pin, aim at the base of the fire, squeeze the lever, and sweep the fire extinguisher from side to side.
E. **CORRECT:** The employee should close all doors to contain the fire.
N NCLEX® Connection: Safety and Infection Control, Accident/Error/Injury Prevention

PRACTICE Answer

Using ATI Active Learning Template: Basic Concept

UNDERLYING PRINCIPLES

- The nurse should check all equipment at the beginning and end of each shift.
- Measures to prevent electrical shock
 - Ensure that all electrical equipment has a three-way plug and grounded outlet.
 - Ensure that outlet covers are used in areas such as pediatric and mental health units.
 - When unplugging equipment, grasp the plug, not the cord.
 - Disconnect all equipment prior to cleaning.
 - Ensure that outlets are not overcrowded.
 - Use extension cords only when absolute necessary. If used in an open area, tape the cords to the floor.

N NCLEX® Connection: Safety and Infection Control, Accident/Error/Injury Prevention