

Patient Environment and Safety

Objectives

Upon completing this chapter, you should be able to:

Theory

1. Discuss nursing responsibilities for environmental management.
2. Identify common noises in health care facilities and ways to minimize their effects on patients.
3. Explain the importance of neatness and order in the patient's environment.
4. Describe methods to prevent mechanical and thermal accidents and injury in health care facilities and the home.
5. Discuss the various forms of bioterrorism, safety measures to be taken, signs and symptoms of agents used, and measures to treat or contain the threat.
6. Discuss the principles for using protective devices.

7. Demonstrate knowledge of the legal implications of using protective devices.

Clinical Practice

1. Discuss how the health care facility's environment affects your patient.
2. Using correct technique, make an unoccupied and an occupied bed.
3. Explain, according to your facility's procedures, how to clean up a biohazard spill.
4. Discuss your clinical facility's response plan to a bioterrorism threat.
5. Given an emergency scenario, practice triaging the victims.
6. Correctly apply an extremity immobilizer.

Skills

- Skill 20-1** Making an Unoccupied Bed
Skill 20-2 Making an Occupied Bed
Skill 20-3 Applying a Protective Device

Key Terms

- acute radiation sickness (ARS)** (p. 324)
biohazard (BĪ-ō-hă-zărd, p. 324)
bioterrorism (p. 324)
environment (ĕn-VĪ-rŏn-mĕnt, p. 313)

- humidity** (hū-MĪ-dī-tē, p. 314)
poison (p. 326)
ventilation (p. 313)

The **environment** is the total of all elements and conditions that surround us and influence our development. Caring for the patient's environment is important in providing holistic care. The goal is to ensure safety while making the patient as comfortable as possible. This chapter presents information on the factors that are controllable in a patient's environment, beds and bed making, how to provide a safe environment, and when and how to apply a protective device.

FACTORS AFFECTING THE ENVIRONMENT

The same environmental factors Florence Nightingale wrote about more than a century and a half ago are still important today. Temperature, ventilation, humidity, lighting, odor, and noise all are factors that must be controlled.

TEMPERATURE

Infants and older adults may need their rooms warmer than other patients because of their poor temperature regulation. Keep room temperature between 68° and 74° F (20° and 23° C). Operating rooms and critical care areas are kept slightly cooler to reduce the patient's metabolic demands.

VENTILATION

Ventilation is the process or act of supplying a building or room continuously with fresh air. Most health care facilities have central air-conditioning units that regulate temperature, humidity, and air exchange. Most hospital windows cannot be opened for safety reasons and are not a source of ventilation. Fans are discouraged because air currents spread microorganisms. A table fan may be ordered if the patient has a

respiratory condition because the patient may find it easier to breathe when air movement is felt. At home, windows may be opened at the top and bottom to encourage air circulation. For certain patients, a negative-airflow room (maintaining air flow into the room) or positive-airflow room (maintaining air flow out of the room) might be indicated.

HUMIDITY

Humidity is the amount of moisture in the air. A range from 30% to 50% is normally comfortable. Very low humidity dries skin and respiratory passages. Most hospitals maintain a low humidity setting to discourage the growth of microorganisms. Vaporizers or humidifiers may be ordered for a patient with a respiratory condition who requires more humidity.

LIGHTING

A sunny, cheerful room can improve a patient's spirits. Areas must have adequate lighting for tasks and to prevent accidents and injury. The light should be bright enough to see without glare and to avoid eyestrain, and be soft and diffuse to prevent sharp shadows. Ideally, your patient will be able to control the lights independently. Appropriate interior and exterior lighting in the home helps protect against crime.

Clinical Cues

At night when the patient is sleeping, use a flashlight to provide low diffuse light to check the patient without disturbing her. Use a flashlight to check fluid levels in drainage containers, amount of intravenous (IV) fluid remaining, and other data.

ODOR CONTROL

Illness changes sensory perceptions. Odors that ordinarily are pleasant may make the patient feel nauseated. Health care facilities may have unpleasant odors from bedpans, urinals, wounds, and other sources. Good ventilation and cleanliness will effectively control odors. Box 20-1 lists odor control measures.

NOISE CONTROL

Noise is inevitable in health care facilities. The hospital should be a place for rest and quiet, yet a patient may experience sensory overload from all of the noise.

Clinical Cues

If not contraindicated, the patient who is disturbed by noise during sleep might try using foam earplugs to mask the noise. They will not prevent a patient from hearing a fire alarm and can be helpful for a restful night's sleep.

Moving equipment in the halls, visitors, and health care personnel all combine to raise the sound level. Sound-absorbing flooring and ceiling

Box 20-1 Odor Control

- Reduce offensive odors by emptying and rinsing the bedpan, bedside commode, urinal, and emesis basin promptly. Change soiled linens as soon as possible.
- Dispose of used dressings, catheters, urine bags, tubing, intravenous bags, and other disposable equipment by placing in a closed plastic bag according to Standard Precautions guidelines and facility procedure. Dispose of them in the dirty or soiled utility room. **Do not throw anything that could become odorous in the patient's unit trash can.**
- Avoid being the source of odors yourself. Odors that linger include cigarette smoke; strong foods, such as onions, garlic, or curry, and perspiration or body odors. Eliminate these by bathing, using unscented deodorant, wearing clean clothes, and performing oral hygiene after food or coffee breaks. **Perfumes, scented lotions, or scented cosmetics should not be worn in a patient care setting.**
- Remove old, disintegrating flowers and stagnant water promptly.
- Consult with your patient before using a room deodorizer or spray. These items can help control lingering odors, but your patient may be allergic or sensitive to the deodorizer itself. You might offend the patient if you spray a deodorizer throughout the room without asking permission first.

materials, carpeting, and plastic equipment are used to reduce noise. The main cause of noise is people. To reduce noise, avoid long conversations on the intercom by going to the patient's room to talk. Encourage staff to limit conversations in the hallway and to speak in lowered voices. Tact is important when dealing with patients, their visitors, and colleagues. Soft, pleasant background music may be played to mask other sounds and promote relaxation. Some hospitals employ professional musicians, often harpists, to play soft music and promote a calm environment.

Think Critically

Your patient's roommate has the television on very loud and your patient is unable to get any rest. What would you do to help your patient?

INTERIOR DESIGN

Patients' rooms and public areas often look more like a hotel now as opposed to the stark white of the past. Rooms are tastefully decorated. The goal is to provide a homelike environment for the patient.

NEATNESS

It is important to provide a neat, tidy atmosphere for your patient. Keep the unit in enough order to be safe,

but not so rigid that the patient may not have possessions from home. **Straighten the patient unit after making the bed. Remove old dishes and unused equipment promptly.** Clear and wipe the over-the-bed table before serving meals. Obtain the patient's permission before disposing of newspapers or magazines. Check and straighten the unit each time you enter and as time permits.

PRIVACY

Privacy is essential for a patient's well-being. Always knock gently and identify yourself before entering the room. In multiple-patient rooms, close the curtain around the patient for personal tasks such as using a bedpan and bathing. Post a sign on the door informing others of such tasks to discourage them from entering the room.

PATIENT UNIT

Each patient unit contains a bed, bedside cabinet, over-the-bed table, chair, call light, and closet (Figure 20-1). The unit usually has an over-the-bed light and a television and/or radio. Newer patient rooms may have Internet access or movies on demand.

BEDS

A hospital mattress is usually firm and has a covering that can be cleansed easily between patients. An overlay (air or gel filled) may be used with a mattress to reduce the risk of pressure ulcers, but newer hospital mattresses are designed to reduce pressure areas. Beds used for health care are usually on wheels and equipped with side rails. The patient may use the rails

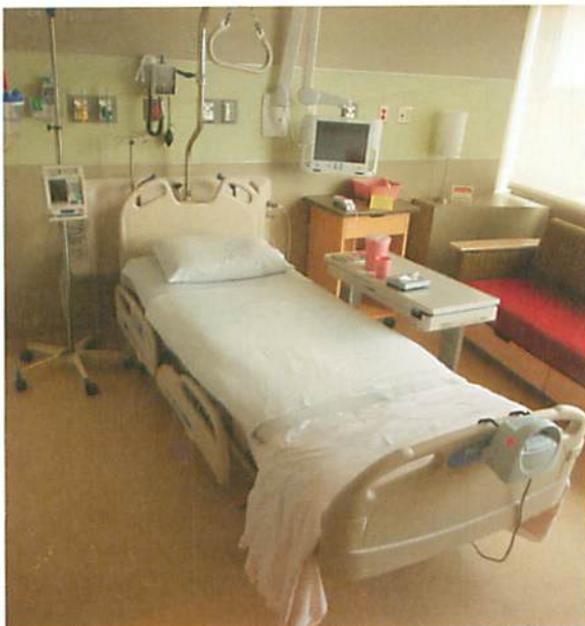


FIGURE 20-1 Common articles found in a patient unit: a hospital bed, bedside table, over-the-bed table, and chair.

to change position or to get out of bed. Side rails can be a safety hazard. You need to make certain that the mattress fits snugly to the rails and that the rails are close enough together so that the patient's head is not able to fit through them. **Always check to be certain the bed wheels are locked, unless you are moving the bed.**

BED POSITIONS

Most hospitals have electric beds, with controls on the side rails for changing the position. Other facilities use manual beds, with a crank for changing the position. The bed is usually kept in the "low position" (i.e., close to the floor). The bed can be placed in various positions (Figure 20-2).

Home Care Considerations

Home Bed Safety Rail

A small-handle side rail or transfer rail may be purchased for a regular bed at home. This rail is attached to a large board that is placed under the mattress. The weight of the patient and mattress secures the rail, which the patient uses to adjust position or get in or out of bed.

BED MAKING

Bed rest may be an important part of the treatment for your patient. Most patients may be out of bed for short periods as they recover. An unoccupied bed is made when the patient is out of bed in the chair or out of the room for a diagnostic procedure or therapy. **An occupied bed is made only if the patient absolutely cannot be out of bed.** For example, a patient whose activity order is bed rest with bathroom privileges would have the bed made while she is using the bathroom. Skill 20-1 and Skill 20-2 describe how to make an unoccupied and an occupied bed, respectively. Bed linens should be neat, orderly, and free of wrinkles. Linens that are rumped may interfere with movement, place pressure on vulnerable skin areas, or cause the patient to fall when getting out of bed. Some important guidelines for making any bed are listed in Box 20-2 on p. 321.

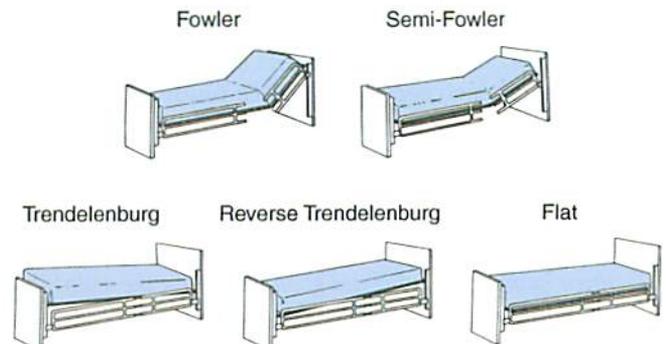


FIGURE 20-2 Hospital beds can be adjusted to different positions.

Skill 20-1 Making an Unoccupied Bed



Today, most beds are made when they are unoccupied. Many patients may be out of bed for the length of time it takes to make the bed. If the patient is allowed out of bed, make the bed at that time to reduce the work for both you and the patient.

Supplies

- Straight or fitted bottom sheet
- Waterproof underpad (if needed)
- Drawsheet or lift sheet (if needed)
- Top sheet
- Pillows (1 or more)
- Linen bag or hamper
- Bedspread and/or blanket
- Pillowcases (1 or more)

Review and carry out the Standard Steps in Appendix D.

ACTION (RATIONALE)

Assessment (Data Collection)

1. Check patient's orders and ability to be out of bed. Obtain help if necessary. *(Promotes safety for you and patient.)*

Planning

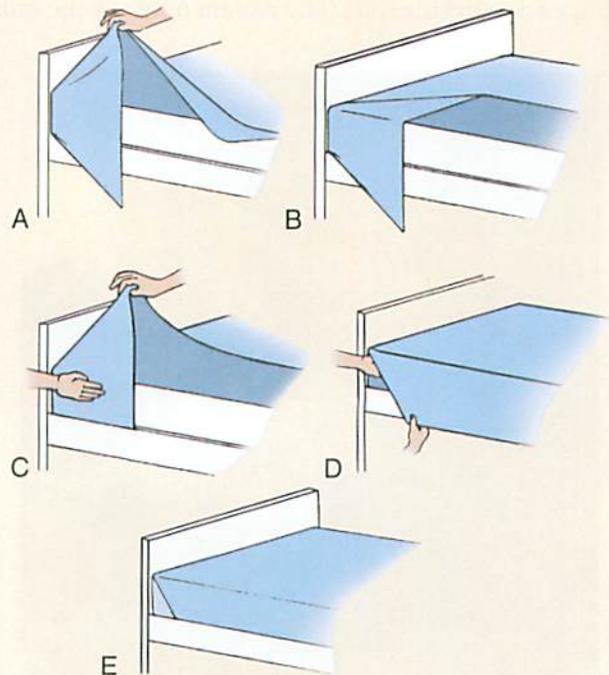
2. Arrange the linens in the order in which they will be used. *(Saves time if linens are in correct order for use.)*
3. Ensure the bed is locked and lower the side rail on your side of the bed. Raise bed to an appropriate working height for you. *(Provides easy access to materials. Prevents back strain and injury.)*

Implementation

4. Perform hand hygiene and don clean gloves if there is a chance of contact with blood or body fluids while removing used linen. *(Prevents spread of microorganisms.)*
5. Loosen all linens on one side of the bed. Go to other side, lower that rail, and loosen the linens from the head to the foot of the bed. Fold bedspread if not soiled; place over the back of patient's chair. Remove sheets and pillowcases, removing each separately. Place pillows on a clean surface, roll linens together, and put them in the pillowcase, linen hamper, or bag. Avoid shaking or fanning the linens or placing them on the floor. *(Loosening permits linens to be removed easily; bedspread and pillows are ready to be replaced. If a linen hamper or bag is not available, place the soiled linen in the pillowcase. Place on the foot of the bed or over-the-bed table to prevent spread of microorganisms.)*

Make the Bed on One Side

6. Check the mattress. Clean if soiled. Move mattress to the head of the bed if needed by grasping it in the center and at the bottom edge while facing the head of the bed and slide it up. *(Mattress is cleaned before making the bed. Mattresses tend to move to the foot of the bed when the head of the bed is raised.)*
7. Make the bed on one side at a time. Place all center folds in the linens at the center of the bed. *(Decreases the number of steps for the nurse. Centering linens puts the same amount of sheet on both sides of the bed.)*
8. Place and center the bottom sheet on the mattress. Unfold the sheet right side out so that the wide hem end is at the top of the mattress and the narrow hem end is at the foot of the bed. Tuck about 12 inches of the sheet smoothly over the top of the mattress. If a fitted sheet is used, fit the top and bottom corners of the mattress into it on your side. *(Secures sheet snugly to the head of the bed and evenly distributes linens.)*
9. Miter the corner at the head of the bed by picking up the side edge of the sheet so that it forms a triangle with the head of the bed, with the side edge perpendicular to the bed. Using the palm of your hand, hold the sheet against the side of the mattress and tuck excess under mattress. Drop the sheet over your hand; then withdraw your hand and tuck the flap of the sheet under the mattress. *(Holds the corners in place.)*



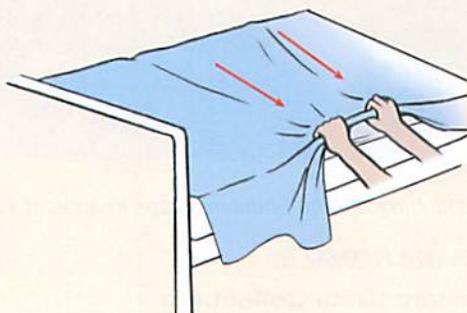
Step 9

Skill 20-1 Making an Unoccupied Bed—cont'd

10. Position the drawsheet or lift sheet (if used) over the middle of the bed. Unfold and tuck both sheets in, on this side, from head to foot. If a lift sheet is used, do not tuck it under the mattress. *(Protects the bottom linens from soiling by placing the drawsheet from the patient's shoulders to below the hips. A lift sheet aids in repositioning the patient.)*
11. Place upper edge of the top sheet at the top of the mattress, seam (bottom) side up, and unfold it toward the foot of the bed. *(Placing top sheet seam side up avoids irritation from the seam when a cuff is formed over the bedspread.)*
12. Position the blanket or bedspread 4 inches from the top of the mattress, and unfold it toward the foot. Repeat for extra blankets. *(Allows sheet to be cuffed over top covers.)*
13. Tuck the sheet, blankets, and bedspread under the bottom of the mattress as one unit if a toe pleat is not needed. Miter the corner by lifting the top linens away from the mattress and up onto the bed about 18 inches from the bottom of the bed. A triangle should be formed. Tuck excess linens hanging below mattress level under it, bring down the upper portion of the linens, and smooth them into a neat diagonal line. *(Secures the linens under mattress. Top covers are not tucked under down the sides of the mattress to allow the patient to get in and out of bed easily.)*

Make the Bed on the Other Side

14. Fan-fold the top linen back toward the center of the bed while tucking in the bottom sheet and drawsheet. Miter the corner. *(Folding the top linen back allows you to see any wrinkles and remedy them. Mitering holds bottom sheet in place.)*
15. Grasp the edges of the bottom sheet tightly in both hands with the knuckles on top. Pull tightly

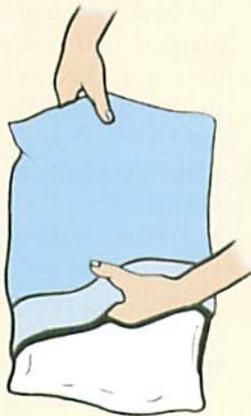
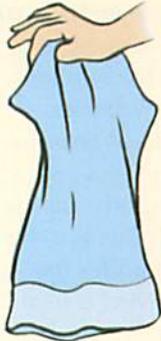


Step 15

- down over the side; tuck under the mattress along the side, working down the side from head to foot. Pull the sheet diagonally at the bottom corner of the mattress to remove wrinkles. *(Provides a smooth bottom sheet without wrinkles that may cause pressure areas.)*
16. Grasp drawsheet (if used); pull tightly and tuck it in over the side of the mattress. If this is to be used as a lift sheet, do not tuck it under the mattress. *(Saves time because a lift sheet is used often.)*
17. Smooth top linens from the head to the foot of the bed if a toe pleat is not needed. Fold sheet, blanket, and bedspread under the mattress at the foot of the bed as one unit. Miter the corner of the top linens. *(Provides patient with a wrinkle-free bed.)*
18. Make toe pleats as indicated. Two examples of toe pleats:
 - a. At the center of the top linens, at the foot of the bed, make a 6-inch lengthwise pleat in the top linens before tucking the covers under the mattress.
 - b. Fold a 2-inch horizontal pleat, 6 to 8 inches from the foot of the bed, across the top linens before tucking the covers under the mattress. *(Allows room for the patient's feet to move and prevents formation of pressure ulcers from the weight of the linens on the toes.)*
19. Move to the head of the bed and fold back the top sheet, forming a cuff 4 to 6 inches over the edge of the blanket and bedspread. *(Provides a smooth edge under patient's chin and prevents soiling of blanket and bedspread.)*
20. Apply the pillowcase by grasping the closed end of the pillowcase and, with the other hand, gathering one side of the open pillowcase up over the hand at the closed end. Grasp the pillow at the center of one end through the pillowcase while holding the pillow away from your body. With the other hand, grasp the open edge of the pillowcase and pull it down over the pillow. Do this until the pillow is completely covered. Adjust the pillow inside the case, keeping it from being contaminated by contact with your uniform. *(Places pillow smoothly in the case without contaminating it.)*

Continued

Skill 20-1 Making an Unoccupied Bed—cont'd



Step 20

21. Place the pillow(s) at the head of the bed with the open ends away from the door. *(Fitting the pillowcase evenly over the pillow with the corners at the correct locations provides a neater appearance.)*
22. Follow agency policy, or open the bed by folding the top linens back. *(Allows patient to enter the bed easily.)*

23. Place the bed in its lowest position raise the far top side rail, and attach the call light to the bed where the patient can easily reach it. Remove soiled linens and place in appropriate area. *(Promotes safety in getting in and out of bed. Attaching call light to bed allows patient to call the nurse easily. Promptly disposing of soiled linens prevents the spread of microorganisms.)*

Evaluation

24. Assess the patient's area. Is the bed neat, smooth, and wrinkle-free? Is everything within easy reach of the patient? Is the unit straight and orderly? Is the bed in the lowest locked position? *(Promotes safety. Patient does not have to reach for items.)*

Documentation

25. Document linen change if required by agency policy. *(Validates that the procedure was performed.)*

Documentation Example

4/19 0800 Patient out of bed in chair. Linens changed, bed locked and in low position, call light within reach.

(Nurse's signature)

? Critical Thinking Questions

1. Why is it inadvisable to gather linen needed for two or three rooms and then carry it all around to deliver to the rooms at the beginning of the shift?
2. Why is it a good idea to pull the old linens apart and separate them if they are bunched up, before rolling them together to take off the bed and put into the linen hamper?

Skill 20-2 Making an Occupied Bed



Linens are changed with the patient in bed if bed rest has been ordered. The procedure is easier and quicker when carried out by two people. Nursing research has shown that many patients experience greater benefit from getting out of bed than remaining on total bed rest. Hence fewer beds are now made as occupied beds.

Supplies

- Bath blanket
- Bath supplies (if combining with a bed bath)
- Linens (as listed in Skill 20-1)

Review and carry out the Standard Steps in Appendix D.

ACTION (RATIONALE)

Assessment (Data Collection)

1. Check patient's orders to ensure patient is not allowed out of bed. Obtain help if necessary. *(Ensures medical plan will be followed. Promotes safety.)*

Skill 20-2 Making an Occupied Bed—cont'd

Planning

2. Arrange the linens in the order in which they will be used. (*Saves time.*)
3. Ensure the bed is locked and lower the side rail on your side. The other rail should be raised. Raise the bed to an appropriate working height. (*Prevents back strain and injury.*)

Implementation

4. Perform hand hygiene and don clean gloves if there is a chance of contact with blood or body fluids during procedure. (*Prevents spread of microorganisms.*)
5. Loosen the blanket and bedspread from the foot of the bed, and remove each piece separately. If unsoiled, fold and place item over the back of patient's chair. Place any soiled linens in the soiled linen or hamper bag. (*Placing unsoiled items over back chair saves time by readying linens to be replaced.*)
6. Place a bath blanket over the patient and the top sheet, unfold it, and ask the patient to hold the top, or tuck under the patient's shoulders. Remove the top sheet from beneath the bath blanket, and place in linen hamper or bag. (*Provides warmth and privacy.*)
7. Move the mattress to the head of the bed. Patient may help by grasping the headboard and pulling if able, or have another staff member help you. (*Allows more room for the feet at the end of the bed.*)
8. Move the patient into a side-lying position at the far side of the bed, facing away from you. Assist the patient into proper alignment. Place a pillow under the head and at the patient's back to keep the patient in place if necessary. (*Provides safety. Allows near side of bed to be made.*)
9. Loosen the bottom linens from the top and side of the bed; roll each piece of linen as close to the patient as possible.
 - a. Smooth the mattress cover (if present), and put the bottom sheet on the bed with the center fold at the center of the mattress. Fan-fold the portion of the sheet that is for the other side of the bed with the center fold at the center of the mattress.
 - b. Push the folded linen under the rolled, soiled bottom sheets that are being removed. Tuck the near side of the bottom sheet under the head of the mattress, and miter the corner. Tuck the sheet under the mattress from the head to the foot of the bed.

(*Allows soiled linens to be removed and clean linens to be placed when the patient rolls to the other side of the bed.*)



Step 9a



Step 9b

10. Place the drawsheet on the bed (optional), centering it on the mattress so that it reaches from the patient's shoulders to below the hips. Fan-fold the far side of the sheet, and push it under the rolled bottom sheets. Tuck the near side under the mattress. Raise the side rail. (*Allows removal of a soiled drawsheet when the patient is turned.*)



Step 10

Continued

Skill 20-2 Making an Occupied Bed—cont'd

11. Go to the other side of the bed, lower that rail, and move the patient to the far side of the bed. If the patient can turn easily, ask the patient to roll to the opposite side. Adjust the patient's alignment, and reposition the bath blanket. Ask the patient to grab the raised side rail for support. *(Allows removal of soiled linens and placement of clean linens. Raised rail provides safety.)*
12. Loosen the bottom linens and roll them up. Place in the linen hamper or bag or in the used pillowcase. *(Prevents the spread of microorganisms.)*
13. If a mattress cover is used, smooth out any wrinkles. Pull the bottom sheet across the mattress, fold over the top of the mattress and smooth, tighten, tuck the excess sheet under the mattress, and miter the corner. *(Prevents wrinkles that may cause pressure ulcers.)*
14. Pull the drawsheet from the center of the bed; to pull tightly, place your knee against the mattress while pulling. Tighten, smooth, and tuck sheets under the side of the mattress from head to foot. *(Protects the bottom sheet from soiling.)*



Step 14

15. Allow the patient to roll onto back. Place the top sheet over the patient and the bath blanket with the top edge folded down a few inches beneath the chin. Have the patient hold the top of the sheet and remove the bath blanket. Position the blanket (if used) and bedspread in the same manner. Smooth the top linens and tuck the excess at the foot under the bottom of the mattress if a toe pleat is not needed. Miter the corner on the near side, then far side. Fold the top edge of the sheet over the blanket, and bedspread to form a cuff. *(Keeps the patient warm and protects privacy while the top linens are placed.)*
16. Make a toe pleat in the top sheet and blanket if desired as described in Skill 20-1, Step 18. *(Provides extra room for the feet.)*
17. Remove the used pillowcase and place in the linen hamper or bag. Apply the clean pillowcase by grasping the closed end of the case in one hand and

gathering one side from the open end up over the other hand. Grasp the pillow at the center of one end through the pillowcase while holding the pillow away from your body. Smooth the pillowcase down over the pillow. Place beneath the patient's head with the open end away from the door. *(Places pillow in the case without contaminating it. Fitting the pillowcase evenly over the pillow with the corners at the correct locations provides a neater appearance.)*

18. Lower the bed, replace call light, and restore the unit. Remove the linen hamper or bag and place in appropriate area. *(Provides safety for the patient and a method to call the nurse. Promptly disposing of soiled linens helps prevent the spread of microorganisms.)*

Evaluation

19. Assess the patient's area. Are the linens neat, smooth, and wrinkle-free? Is the unit restored? *(Restoring the unit promotes safety because the patient does not have to reach for items.)*

Documentation

20. Document linen change on the flow sheet or in the nurse's notes, depending on agency policy. *(Validates the completion of the procedure.)*

Documentation Example

10/15 0900 Linens changed on occupied bed, which is in a locked, low position.

(Nurse's signature)

Special Considerations

- If the patient is in traction, the bed may have to be made from the top to the bottom (head of bed to foot of bed), instead of side to side. The same principles are applied from top to bottom. The patient may use the trapeze bar if able to help lift as you work the sheets down the bed.
- Linens should be smoothed, with wrinkles removed, whenever the patient is turned.

Home Care Considerations

- For the home care patient, a large plastic bag can be used crosswise under the hip area to protect the mattress from soiling. It is placed beneath the mattress pad to prevent any discomfort to the patient.

Critical Thinking Questions

1. For work efficiency, is it better to work with a colleague, helping him make occupied beds and then having him help you, or to make your occupied beds on your own?
2. When a patient is to be on bed rest, how can you sometimes make the bed when she is not in it?

Box 20-2 Guidelines for Bed Making

- Use good body alignment, a wide base of support, and a proper working height when making the bed. Face the direction of movement and bend at the knees, not the back.
- Complete the linen change on one side before moving to the other side to save time and conserve energy.
- Avoid contaminating clean linen. Once linens enter a unit, they are exposed to that patient's microorganisms and must not be returned to the clean supply or used elsewhere.
- Unfold linens onto the bed. Do not flip or fan linens, to avoid stirring up air currents. Microorganisms travel on air currents and could be carried out of the unit.
- Remove linens one piece at a time to avoid wrapping dentures, eyeglasses, religious objects, or other patient belongings in soiled linens.
- Do not place used or soiled linen from one patient on the bed, table, or chairs belonging to another patient's unit.
- Carry used or soiled linens away from the body and place them in closed linen hampers or bags. Use a pillowcase if a linen bag is not available, and transport it to the linen hamper or chute. **Do not place soiled linens on the floor.**

SAFETY

Safety is a primary concern when caring for your patients. Safety is needed to prevent accidents and possible injuries to patients, visitors, and health care personnel. Methods of meeting the following 2012 National Patient Safety Goals from The Joint Commission are presented in the appropriate chapters of this text:

- Improve the accuracy of patient identification.
- Improve the effectiveness of communication among caregivers.
- Improve the safety of using medications.
- Reduce the risk of health care–associated infections.
- Reduce the risk of patient harm resulting from falls.
- Prevent health care–associated pressure ulcers (decubitus ulcers).
- The organization identifies safety risks inherent in its patient population.

The most common accidents among patients are falls, burns, cuts, and bruises. Fights with others, loss of personal possessions, choking, and electrical shock may also occur. Home safety is another issue you need to discuss with your patients. You must be aware of possible safety hazards and correct them to prevent accidents. Box 20-3 describes nursing actions to promote patient safety. (See the Evolve website for the following useful tools: Alarm Safety and Nurse Responsibility, Alarm Safety Worksheet.)

Fall Risk Assessment

Place a check mark in front of the items that apply to the patient.

General Information

- ___ Age over 70
- ___ History of falls*
- ___ Confusion at times
- ___ Confused most of the time*
- ___ Impaired memory or judgment
- ___ Unable to follow directions*
- ___ Needs assistance with elimination
- ___ Visual impairment
- ___ Feels physically weak*

Medications

- ___ Receiving central nervous system suppressants (narcotic, sedative, tranquilizer, hypnotic, antidepressant, psychotropic, anticonvulsant)
- ___ Receiving medication that causes orthostatic hypotension (antihypertensive, diuretic)*
- ___ Medication that may cause diarrhea (cathartic)
- ___ Medication that may alter blood glucose levels (insulin, hypoglycemics)

Gait and Balance

- ___ Poor balance when standing*
- ___ Balance problems when walking*
- ___ Swaying, lurching, or slapping gait*
- ___ Unstable when making turns*
- ___ Needs assistive device (walker, cane, holds on to furniture)*

Note: A check mark on any starred item indicates a risk for falls. A combination of four or more of the unstarred items indicates a risk for falls.

FIGURE 20-3 Fall risk assessment tool.

HAZARDS**Falls**

Falls are a safety hazard. The three most common factors that predispose a person to falls are impaired physical mobility, altered mental status, and sensory and/or motor deficits. The Joint Commission 2012 National Patient Safety Goals require that every patient be assessed and periodically reassessed for risk for falling, correlating the patient's medications with increased risk for falls. Action must be taken to mitigate identified risks. An example of a fall risk assessment tool is presented in Figure 20-3. Chapter 40 provides safety tips to prevent the elderly from falling in the home. In most facilities a patient at risk for falls is given a color-coded wrist or leg band to alert the staff of this increased risk. Assistive devices, hip protectors (Figure 20-4), and personal alarms have been shown to decrease fall risk. Personal alarms sense a change in position or pressure and sound an alarm to alert caregivers that patients are attempting to get out of bed or a chair (Figure 20-5). The Quality and Safety

Box 20-3 Nursing Actions to Promote Patient Safety**IN A HEALTH CARE FACILITY**

- Orient the patient and family when admitted to the room with regard to operation of call bell system, bed, television, and radio. Check to be certain the patient can operate the controls.
- On admission, assess the patient's gait and risk for falling. If the patient is considered to be at risk for falls, implement your facility's fall risk prevention program.
- Evaluate the patient's drug regimen for side effects that may increase the risk of falling (e.g., those that affect the central nervous system or cause orthostatic hypotension, dizziness, or drowsiness).
- Keep the bed in the low position if not giving direct care.
- Put mattress onto the floor or a low platform if there is a high risk for a fall and the patient does not ask for help when getting out of bed.
- **Toilet the patient on a regular schedule to decrease the chance the patient will try to get out of bed unassisted.**
- Lock the bed wheels to prevent the bed from rolling when the patient attempts to get in or out.
- Provide a night-light to aid patients in going to the bathroom at night, to decrease disorientation, and to prevent bumping into furniture.
- Encourage the use of firm, nonskid slippers to prevent slipping while walking.
- Answer call lights quickly so that the patient learns to trust you and does not feel the need to get up without help.
- Tell the patient when you will next check in, and be prompt.
- Be certain the patient is comfortable and all desired items and call bell are in easy reach before you leave the room.
- Encourage use of grab bars for the toilet, tub, and shower.
- Place the high-risk or restless patient in a room close to the nurses' station so you can check on the patient often.
- Stay with the patient who is confused, agitated, or unsteady whenever the patient is up.

- Restrict fluids after 6 P.M. if a patient is up at night frequently to empty the bladder and has a history of injury when out of bed.
- Provide diversionary and social activities that confused and restless patients might enjoy. Seating patients confined to a wheelchair close to the nurses' station often provides enough stimulation to occupy their thoughts and reduce their need to wander.
- Be certain wheelchair brakes are locked before transferring a patient into or out of it.
- Perform change-of-shift safety checks of the unit.

IN THE HOME

- Place a nonskid bath mat in the tub and shower.
- Use night-lights for moving from the bedroom to the bathroom at night.
- Suggest the installation of grab bars for the bathroom by both the toilet and bathtub or shower.
- Install door buzzers or bed alarms that sound when the patient leaves the bed or opens an outside door.
- Keep the furniture arrangement and position of personal items constant to decrease confusion and eliminate the need to hunt for items.
- Maintain sufficient activity during the day to prevent too much napping, which can lead to nighttime wandering.
- Encourage removal of extension cords because these may cause a fall.
- Caution the patient that items on the floor and animals may also cause falls. Removing a companion animal from the home because of risk of a fall must be carefully weighed against the social and emotional importance of the companionship a pet provides.
- Inform the patient and the family that hospital beds may be obtained or rented for home use. Provide appropriate community resources as indicated.



FIGURE 20-4 Hip protectors disperse the force of a fall to soft tissues, decreasing the risk of hip fracture.



FIGURE 20-5 Leg alarm.

Education for Nurses (QSEN) project has developed a valuable alarm safety worksheet that may assist you in the clinical setting (Spencer and Foss, 2008).

Elder Care Points

Falls are the most frequent cause of injury for the elderly patient in an acute care facility.

Burns

Burn prevention includes protecting the patient from accidental thermal injury and the threat of fire. Thermal injuries may be caused by either hot or cold materials. A person who has diabetes, impaired circulation, or paralysis or who is taking medications that alter mental awareness is more easily burned than a healthy person. To prevent these injuries, use a barrier between the patient's skin and the thermal application. Check the temperature of oral liquids before giving them to the patient. Warn the patient if a food or drink is hot. Caution the patient to avoid lying on, or sleeping with, heating pads or ice packs. Inspect electrical cords for frayed or broken areas that may cause sparks or fires. The engineering staff must check all electrical appliances brought into the hospital from home before use to ensure safety.

Smoking

Smoking is banned in most health care facilities; however, some long-term care agencies allow smoking in designated areas. Carefully supervise the patient who wants to smoke and is sedated, confused, or irrational. Warn your patient not to smoke in bed. **Smoking is never allowed when oxygen is in use because a spark could cause a fire.** Any equipment that might cause a spark is also prohibited near oxygen. Inform your patient who uses oxygen at home, and the family, of this risk.

We must create social and physical environments that promote good health for all. Environmental air quality free of smoke is one such environment. Encourage your patients not to smoke (U.S. Department of Health and Human Services, 2010).

Health Promotion Points

Smoking Cessation

Patients and residents of long-term care facilities who smoke should be given information on how to quit smoking. Smoking damages the lungs, blood vessels, and other vital organs and decreases the oxygen-carrying capacity of the blood. Positive reinforcement for efforts to quit smoking is very important. Clear, consistent advice; individual or group therapy; nicotine replacement therapy; and frequent telephone contact have been shown to increase a smoking cessation program's effectiveness.

Fire

Fire is a possibility in any setting. **You must know and be familiar with your institution's fire regulations.** This

includes knowing the location of the fire extinguishers, fire alarms, and escape routes and how to notify the telephone operator of a fire in your area.

There are three basic types of fire extinguishers: A, B, and C. Type A is a water-under-pressure extinguisher that is used for paper, wood, or cloth fires. Type B contains carbon dioxide and is used for gasoline, oil, paint, fat, and flammable liquid fires. Type C is used for electrical fires and contains carbon dioxide. The most commonly seen extinguisher is an ABC combination extinguisher that can be used on any kind of fire.

Most agencies use the *RACE* acronym to respond to a fire because it is easy to remember. Should a fire occur, you must:

- Rescue any patients in immediate danger by removing them from the area.
- Activate the fire alarm system.
- Contain the fire by closing doors and any open windows.
- Extinguish the flames with an appropriate extinguisher.

Use proper body mechanics to evacuate patients to prevent injury. Protect against possible smoke inhalation by placing wet towels across the bottom of closed doors, and have people hold wet washcloths over their noses and mouths. This traps most of the smoke in the washcloth during breathing. Box 20-4 lists home fire safety precautions.

Think Critically

Why do facilities schedule announced and unannounced fire drills?

Box 20-4 Fire Safety in the Home

- Make certain that each room has two clear exits and everyone knows and has practiced using the escape routes.
- Install smoke detectors on each level of your home.
- Never smoke in bed. Use sturdy, nonspill ashtrays. Check furniture for any smoldering cigarette butts after parties.
- Identify your house with large, easily seen address numbers for the fire department.
- Keep matches, lighters, and flammable liquids out of the reach of children. Store paints, thinners, and other flammable liquids in their original containers, away from heat, sparks, or flame. **Never store gasoline or propane inside the home.**
- Never leave cooking food unattended. Keep cooking areas clear of combustible materials.
- Keep your attic free from combustibles such as magazines and newspapers.
- Have chimneys and central heating systems inspected at least once per year and cleaned if necessary.
- Never overload electrical circuits or bypass fuses or circuit breakers. Do not run extension cords under furniture or carpets or across doorways.
- Use portable space heaters with care.
- Do not allow smoking in a home where oxygen is in use.

Table 20-1 Common Diseases Spread Through Bioterrorism

BIOLOGIC AGENTS USED AS WEAPONS	SYMPTOMS	TYPICAL INCUBATION PERIOD (DAYS)
Anthrax	Fever, malaise, fatigue, dry cough, chest discomfort progressing to severe respiratory distress and shock. Death typically 24-36 hr after onset of severe symptoms.	1-6
Botulism	Difficulty speaking and swallowing, ptosis (drooping eyelids), blurred or double vision; respiratory distress, descending muscular paralysis leading to respiratory arrest.	1-3
Ebola virus (<i>Filovirus</i>)	Abrupt onset of fever, headache, muscle pain, swollen lymph nodes, sore throat, nausea, vomiting, diarrhea, maculopapular rash on the trunk, petechiae, and progressive bleeding.	2-21
Lassa fever (arenavirus)	Severe fever, weakness, malaise, shock, profuse bleeding, chest pain, tremor, hearing loss.	6-21
Plague	High fever, headache, chills, mucopurulent sputum, chest pain, hemoptysis, purpura.	1-6
Ricin (cytotoxin from castor beans)	Fever, chest tightness, cough, dyspnea, nausea, and arthralgias present first. Pulmonary edema occurs within 18-24 hr. Death occurs in 36-72 hr.	4-8 hr
Smallpox	Initially, malaise, fever, vomiting, headache, and backache; 2-3 days later, chickenpox-like lesions starting on the face and extremities, with progression from macules to papules to pustular vesicles.	12
Tularemia	Fever, chills, headache, swollen lymph nodes, nonproductive cough.	3-6

Data from United States Army Medical Research Institute of Infectious Diseases (2011). *Medical management of biological casualties handbook*, (7th ed.). Available at www.usamriid.army.mil/education/instruct.cfm; CDC Special Pathogens Branch (2009). *Questions and answers about Ebola hemorrhagic fever*. Available at www.cdc.gov/ncidod/dvrd/spb/mnpages/dispages/ebola/qa.htm; World Health Organization (2012). *Lassa fever*. Available at www.who.int/mediacentre/factsheets/fs179/en.

HAZARDOUS MATERIALS

Biohazards

A **biohazard** is defined as a biologic agent, chemical, or condition (such as unsecure laboratory procedures) that can be harmful to a person's health. The Occupational Safety and Health Administration (OSHA) classifies materials in the work environment according to the degree of hazard to health that they impose. OSHA publishes specific guidelines for labeling, handling, cleaning spills, and disposing of these materials. Mercury is an example of a biohazard, as are blood and most body fluids. A material safety data sheet (MSDS) should be available for each biohazard substance stored or used on the nursing unit. These sheets are consulted for recommended methods of storage, labeling, handling spills, and disposal. Everyone must comply with these guidelines.

Bioterrorism and Other Terrorism Agents

Terrorist activities are designed to cause panic, fear, and chaos and disrupt an area's rescue and medical systems. **Bioterrorism** is the release of pathogenic microorganisms into a community to achieve political and/or military goals. Common diseases, symptoms, and incubation periods for agents used in bioterrorism are listed in Table 20-1. It is important to know the early signs and symptoms of these agents because many of them initially manifest with vague or flulike symptoms.

Chemical terrorism is the use of certain compounds to cause destruction to achieve political and/or military goals. Health care agencies and institutions have developed plans and methods to handle these threats to safety. Chemical agents come in liquid, gas, and solid forms. Temperature and pressure can affect the form of the chemical agents. There are several types of chemical threats, including pulmonary agents, cyanide agents, nerve agents, vesicants, and incapacitating agents. Table 20-2 lists the agents used in the different kinds of chemical threats and the symptoms associated with each type.

Radiation is a form of energy that can come from man-made sources as well as the sun and outer space. Some elements that release radiation, such as uranium, exist naturally in the soil. Plutonium, which is used in nuclear power plants, is also used to make nuclear bombs. Terrorists may use radioactive substances attached to an explosive device (a "dirty bomb") to disperse radiation. The body can be protected from radiation in three basic ways: time (decrease the amount of time near a source), distance (increase your distance from a source), and shielding (use a barrier or shield between you and the source). **Acute radiation sickness (ARS)** develops when most or all of the body is exposed to a high dose of radiation, usually over a short time. Initial symptoms of ARS are nausea, vomiting, and diarrhea. Loss of appetite, fatigue, fever, skin damage, hair loss, and potentially seizures, coma, and death are possible later effects.

Table 20-2 Types, Symptoms, and Effects of Chemical Weapons

TYPE	EXAMPLES	SYMPTOMS	EFFECTS
Pulmonary agents	Phosgene (CG) Diphosgene (DP) Chloropicrin (PS) Chlorine (CL)	Irritate eyes and tracheobronchial tree. Tears, coughing, and chest discomfort. May appear minor at first but gets worse to include dyspnea and tachypnea.	Damages alveolar-capillary membranes during inhalation. Can result in pulmonary edema.
Blood agents	Hydrogen cyanide (AC) Cyanogen chloride (CK)	Odor of bitter almonds on the breath is a classic sign but may not be detected. Severe respiratory distress in an acyanotic person. Skin coloring may be cherry red, cyanotic, or normal. Irritation of eyes, nose, and airways.	Work by being absorbed into the blood. Cyanide prevents intracellular oxygenation. Exposure to high concentrations can lead to death in 6-8 min. Severe exposure may result in asystole.
Nerve agents	Tabun (GA) Sarin (GB) Soman (GD) GF VX	Pupil constriction, red eyes, reduced vision, airway constriction, uncontrolled rhinorrhea, salivation, tearing, and sweating. Uncontrolled secretions in the gastrointestinal and respiratory tracts as well. May lead to convulsions, paralysis, and death.	Prevent the nervous system from working properly. Most toxic of the known chemical agents. Major effects seen in skeletal and smooth muscles.
Vesicants/blister agents	Sulfur mustard (H, HD) Lewisite (L) Phosgene oxime (CX)	Irritate exposed skin and membranes. Mustard is the only one that does not cause immediate symptoms, but it can cause tissue damage within several minutes without burning or redness. Typical onset for all agents is 4-8 hr.	Cause blisters or vesicles in eyes, respiratory tract, and skin, which is how this type gets its name. Deadlier than pulmonary agents or cyanide.
Incapacitating agents	BZ	Range of usual onset is 30 min-4 hr. May see paranoia to full-blown delirium and periods of deep sleep with clawing or climbing movements. Person at risk of hyperthermia and injury from own random movements.	Designed to impair, not kill, victims through hallucinations, illusions, and nausea and vomiting. In most cases do not cause death.

You must be familiar with your institution's policies and procedures for handling victims of a terrorist attack. Knowing how to respond to terrorist attacks with various agents will help prepare you should a crisis happen in your area. Being prepared will help alleviate your anxiety and increase your confidence in dealing with such unpredictable events. In turn, this will help you manage your patients' fears and give more effective care.

Decontamination. When a terrorist attack has occurred, such as the one with Sarin gas in a Tokyo subway in 1995, a portable decontamination unit with a specially trained staff is set up outside the emergency department (ED). The staff must wear masks and protective clothing that are impervious to chemicals and cover *all* skin surfaces (Figure 20-6). Military mission-oriented protective posture (MOPP) suits may be used that have a hooded pullover top, drawstring trousers, rubber boots, and gloves. A chemical mask with filtered respirator must be worn with the suit. An emergency protocol from the local health department's disaster response plan is followed to decontaminate victims before they enter the hospital building. Thorough scrubbing of all of the person's skin is often part of the protocol.



FIGURE 20-6 Biohazard suits worn by personnel assisting victims (drill at PeaceHealth Southwestern Medical Center, Vancouver, Washington.)

Triage and Treatment. Patients are triaged as they enter the ED. The word "triage" comes from the French word *trier* ("to sort"), as French physicians in the battlefields of World War I devised a plan to sort patients according to who would be likely to survive. Patients are assessed and labeled according to the priority of care: immediate,

delayed, minimal, or expectant. Patients who require lifesaving care are labeled “immediate”; care for those in need of major or prolonged care can be “delayed” briefly; those with minor injuries to be attended to are labeled “minimal”; and “expectant” indicates those with severe life-threatening injuries who probably will not survive even with medical care. Triage priorities are based on the premise that limited medical resources should be used on those patients who will most likely live if they receive treatment.

Treatment is based on the type of agent to which the patient was exposed and the degree of exposure. Antibiotics are used for some of the biologic agents, and antidotes may be used for some chemicals and poisonous gases. Otherwise, treatment is directed at supporting organ function while the body tries to recover. Life support measures using drugs, ventilators, and dialysis, if needed, are used.

Poison

A **poison** is a substance that, when ingested, inhaled, absorbed, applied, injected, or developed within the body, may cause functional or structural disturbances. This is possible even if only a small amount of the poison is encountered. Agents used in chemical terrorism fit into this category. Treatments and antidotes for poisoning can be obtained from a poison control center or are listed on some containers. **Some poisons do not have antidotes or treatments.** When reporting a known or suspected poisoning, have the label handy. Report the following:

- Name of the product
- Patient’s age
- Amount you believe is involved
- Any symptoms and/or complaints you observe



Patient Teaching

Poison Prevention

All patients should be taught the following safety precautions:

- Never call medicine “candy.” Store all medicines in child-proof containers.
- Keep toxic substances in a locked cabinet or closet out of the reach of children. Label with poison stickers.
- Always keep toxic substances in their original labeled container. Never put toxic substances in beverage or food containers.
- Obtain the poison control center number from your local operator. Keep it near the telephone so you do not need to search for it in an emergency.
- Never induce vomiting unless instructed by a professional. Depending on the type of poison (e.g., lye, gasoline, grease, or some cleaning and petroleum products), inducing vomiting may cause more damage.
- Older adults may obtain prescription medications in bottles that are not childproof. If young grandchildren visit, these items should be kept in a locked cabinet.

PROTECTIVE DEVICES

Protective devices, formerly called *restraints*, were overused in the past. Restricting movement on a long-term basis caused problems such as muscle weakness, atrophy, loss of bone mass, joint contractures, constipation, incontinence, pressure ulcers, depression, and cognitive impairment. The patient’s self-concept and mood were negatively affected, and both the patient and family were affected emotionally. Some staff used these devices as a way to punish or discipline a patient. **This is an illegal, unethical, and totally unacceptable practice that constitutes malpractice.**

Restraints are used in two types of situations: for behavioral or nonbehavioral indications. A protective device is used for a behavioral health reason if the patient is in a psychiatric setting or has demonstrated a sudden change in mental status or behavior. Nonbehavioral usage is for the continuation of medical treatments. An instance of a nonbehavioral use would be an elderly person with a history of dementia who needs to have her IV site protected from attempts to dislodge the catheter. Health care workers must check patients in a behavioral health protective device more frequently. The array and use of physical and chemical protective devices (i.e., medication) in psychiatric or behavioral health settings are not covered in this text. **It is your responsibility to be aware of and follow the regulations in your facility and area.**

LEGAL IMPLICATIONS OF USING PROTECTIVE DEVICES

Federal and local laws protect the patient from physical and mental abuse and from physical and chemical restraints except those that are authorized by a physician, in writing, for a specified and limited time, or that are needed in an emergency situation. The devices must be applied by licensed, qualified personnel.

The Joint Commission supports the use of protective devices if clinically necessary, but only as a last resort. This text has described the use of the bed’s side rails as a way to increase a patient’s independence in changing position or getting in or out of bed. However, in some situations and facilities, full side rails are considered restraints because they limit a patient’s ability to move, whereas half-rails do not, and are not considered restraints. The evidence demonstrates that using bed rails as a restraint can be harmful.

ALTERNATIVES TO PROTECTIVE DEVICES

The standard of practice is to consider alternatives to restraints before using them. Many of the actions described in Box 20-3 on p. 322 involve frequent observations of the patient, which help prevent patient injury and decrease the use of the devices. Encourage family and friends of a patient who is confused to sit with the patient to promote safety.

PRINCIPLES RELATED TO THE USE OF PROTECTIVE DEVICES

Box 20-5 lists five principles related to the use of protective devices. In general, the device must be of direct benefit to the patient.

Elder Care Points

Older adults may be more confused in unfamiliar surroundings such as an acute care facility. Having familiar items from home, such as photographs or mementos, will help older adults feel more comfortable. Reorient the older adult frequently to reduce the need for a protective device.

For example, a patient who is confused may try to pull out a nasogastric tube. To continue medical treatment, it may be decided to place the patient's hand in a hand mitten. If this does not prevent the patient from pulling out the nasogastric tube, then a wrist or extremity device may be ordered.

The order must be written before applying a device. In an emergency, some agencies permit a device to be applied without a written order. You must obtain a written order as soon as possible. When the protective device is no longer needed, obtain an order to discontinue it. The order usually specifies the type of device and how long it may be used (usually no more than 24 hours, depending on the patient's age).

Communication

Explaining the Need for a Protective Device

The situation below shows how a caregiver can explain the need for using a protective device to a family member.

Helen Klein is a 68-year-old patient in your unit. She was admitted for a right total hip replacement and has a history of Alzheimer disease. Two hours ago Mrs. Klein returned to the unit postoperatively. Because of her diagnosis of Alzheimer disease, you have placed her in a room near the nurses' station. Mrs. Klein is very confused and only oriented to person. Shortly after she returned to the unit, her family went to dinner. You have tried repeatedly to orient her while her family is at dinner. You are now exiting the room after finding that Mrs. Klein was trying to get out of bed and has removed her dressing, drain, and IV line. You see her daughter coming down the hall. The daughter asks you, "How is my mother? Is she resting?"

Nurse: Your mother is fine, she is awake. May I talk with you for a minute?

Ms. Klein: Sure.

(You should find a quiet, private place, out of Mrs. Klein's hearing, to talk with the daughter.)

Nurse: Ms. Klein, although your mother is stable, being in the hospital and changing her routine has added to your mother's confusion. While you were at dinner, she removed her dressing, drain, and IV line and was trying to get out of bed. We already have her in a room close to the nurses' station so that we can check on her more frequently. Is it possible for you or another family member to spend the night with her?

Ms. Klein: Why would you want me to do that? I did not think family members could stay with patients.

Nurse: For some patients, it is safer and they rest better if someone they are familiar with remains. This helps keep the patient oriented and calm. If this is not possible, we may need to use an extremity immobilizer for your mother so that she does not pull out lines again.

Ms. Klein: You mean tie her hands? That is cruel.

Nurse: Extremity immobilizers are secured to the bed, but it is not meant to be cruel. The purpose is to keep your mother safe. I do not want her to pull out her tubes and drains and endanger her safety.

Ms. Klein: I see what you mean. I'll talk with my brothers and sisters and see if one of us can spend the night with her. If we are with her, will she need to be tied down?

Nurse: It has been my experience that when a family member stays, the patient rests and remains in bed, so no, we would use extremity immobilizers only if necessary to protect your mother.

When applying the protective device, make certain that the patient's movements or tugging will not impair circulation or nerve function. Padding the device with a soft washcloth or gauze pads will prevent skin irritation. The device should fit snugly when applied, but should not compromise the patient's neurovascular status. **You should be able to easily fit your index and middle fingers between the patient and the device.** A device that is secured too tightly may cause injury. Skill 20-3 describes how to apply different protective devices.

Secure the ties of a protective device to an immovable part of the bed frame. Do not tie to the side rails because lowering the rails may cause the device to be pulled too tightly around the patient or cause strain on a joint of an immobilized extremity. Place the ties under the armrests of a chair and secure at the back. This also prevents the patient from sliding the tie up and off the back of the chair.

Use a half-bow knot to secure the device to the bed frame or chair. It is a secure knot that will not slip, even if the patient tugs on the tie; however, it is easily undone by health care workers. A half-bow knot is similar to that used when tying shoes except only one loop is made (Figure 20-7 on p. 330).

Box 20-5 Principles Related to the Use of Protective Devices

- The use of protective devices must help the patient or be needed for the continuation of medical therapy.
- Use the least amount of immobilization needed for the situation.
- Obtain a written order for all devices that limit movement or immobilize the patient. Notify the physician as soon as the device is no longer needed.
- Apply the device snugly but not so tightly as to interfere with blood circulation or nerve function.
- Remove the device and change the patient's position at least every 2 hours. Perform active or passive exercises for immobilized joints and muscles.

Skill 20-3 Applying a Protective Device



A protective device is used only after all alternative methods have been tried. Each type of device has its own purpose or main uses. A security or safety belt is used for the patient who is at a high risk for falls or to secure a patient to a stretcher. An extremity immobilizer is used to prevent disruption to dressings, skin grafts, intravenous (IV) lines, urinary catheters, nasogastric tubes, and so forth. A mitten or hand mitt is used to keep the patient from scratching, from grasping tubes and catheters, or from pulling the ties on a limb immobilizer.

Supplies

- Protective devices
 - Belt
 - Extremity immobilizer
 - Mitten or hand mitt
- Soap, washcloth, towel, and lotion

Review and carry out the Standard Steps in Appendix D.

ACTION (RATIONALE)

Assessment (Data Collection)

1. Assess whether all other possible measures have been used to resolve the safety problem and whether they have been effective. *(Confirms that all possible methods of ensuring patient safety have been tried before using a protective device.)*
2. Check to see whether there is an order for a protective device; if not, obtain one. *(Use of a protective device requires a written order.)*
3. Review your agency's policy and procedure for use. *(Keeps your practice within legal parameters.)*
4. Assess the skin and circulation in the area where the device will be applied. *(Provides baseline data before application of the device.)*

Planning

5. Review manufacturer's instructions about the application of the device and obtain help if necessary. *(Promotes correct usage and safety for you and patient.)*

Implementation

6. Explain the purpose and need for the device to the patient and family. *(Decreases anxiety of patient and family.)*
7. Lock brakes on wheelchair or bed before proceeding. *(Promotes safe application.)*

8. Apply the device and tie with a half-bow knot. *(A half-bow knot fastens the device, yet can be easily and quickly untied by you in an emergency.)*

For Security or Safety Belt

9. With the patient sitting in a wheelchair, place the security belt around the waist or upper legs and slip one end of the tie through the slit on the opposite side. *(Secures belt to patient before it is attached to chair.)*



Step 9

10. Bring both ends under the armrests and behind the chair (one on each side), and tie to the frame or fasten the buckle, if present. *(Prevents patient from untying the protective device.)*

For Chair with Tabletop

11. Ensure the patient is awake and sitting fully upright in the chair. *(Prevents patient from sliding down.)*
12. Carefully slide the table top into secure and locked position, ensuring fingers are not near the latch mechanism. *(Prevents injury while table top is being secured.)*
13. Place patient near high traffic area of the unit, such as the nurses' station. *(Prevents unsupervised use of chair with tabletop.)*

Skill 20-3 Applying a Protective Device—cont'd

Step 13

For Extremity Immobilizers

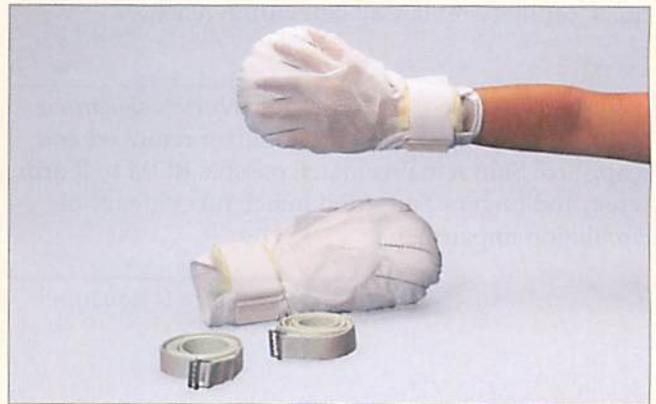
14. Wash and dry the patient's wrist(s) or ankle(s); apply lotion and massage areas. (*Prepares patient for the application.*)
15. Apply immobilizer to the extremity needed. Wrap the padded end around the wrist or ankle; pull the tie through the slit or buckle, or fasten with Velcro and attach to the bed frame. (*Promotes safety and decreases chance of impeding circulation of extremity.*)



Step 15

For Mitten or Hand Mitt

16. Wash and dry the patient's hand thoroughly; apply lotion and massage hands. (*Prepares patient for the application.*)
17. Slip hand into mitt, and slip tie around wrist and secure. It is usually better to apply mitts to both hands so that the devices are not easily removed by patient. If patient is partially paralyzed, use only one mitt on the nonparalyzed hand. (*Promotes safety and prevents using fingers to pull out tubes and IV lines.*)



Step 17

Evaluation

18. Check on the patient at least every 15 to 30 minutes or as directed by your agency and observe neurovascular function and patient's position and needs. (*Monitors patient for problems with the device and positioning and prevents patient's needs from going unmet.*)
19. At least every 2 hours (or according to agency policy), release the ties, change the patient's position, supervise active or provide passive range-of-motion (ROM) exercise, and assess the condition of the skin under the device. Remove only one device at a time. (*Provides safety while preventing joint stiffness and muscle aches; minimizes risk of pressure ulcers.*)
20. Provide access to a call bell or other method to summon the nurse. (*Provides safety and makes patient feel less isolated.*)
21. Assess for the continued need for the device. (*Prevents patient from being in a device longer than necessary.*)

Documentation

22. Note the patient's behavior, alternative methods tried, explanation to patient and family, and condition of skin before applying device. Ongoing documentation includes periodic reevaluation of need for device, skin condition, pulses, patient's

Continued

Skill 20-3 Applying a Protective Device—cont'd

tolerance of device, times the restraints are removed and then reapplied, and the time when the device is removed and discontinued. (*Validates the need for the use of a device and that the device is being used correctly.*)

Documentation Examples

10/15 1400 Oriented to person only, thrashing in bed, and unable to understand directions to prevent dislodgement of IV line. Physician notified, order obtained for right wrist protective device, and device applied. Skin intact; fingers warm, dry, and with quick capillary refill. Call bell within reach.

(Nurse's signature)

10/15 1600 Right wrist immobilizer removed and reapplied. Skin remains intact; passive ROM to R arm, wrist, and fingers. Sensation intact; no evidence of circulation impairment.

(Nurse's signature)

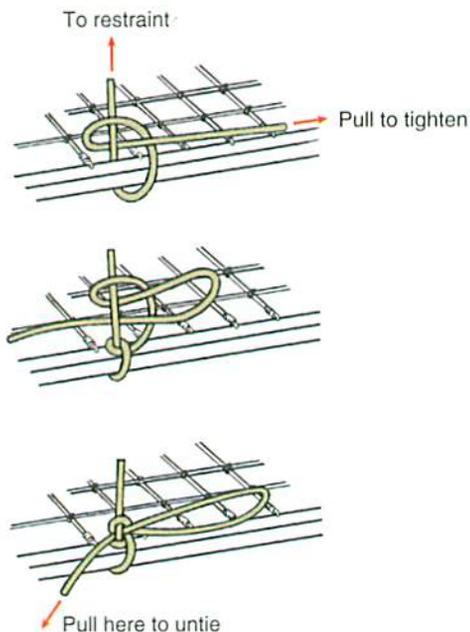


FIGURE 20-7 Tying a half-bow or safety knot.

Remove the device at least every 2 hours and perform active or passive range-of-motion exercises for immobilized joints and muscles to prevent complications. Use supportive pillows and pads for positioning. Check circulation and pulses distal to the device every 15 to 30 minutes. Signs that the circulation or nerve function has been impaired include skin coolness, change in color (particularly pallor or a bluish hue),

Home Care Considerations

You must consider the family or caregivers when:

- Assessing their ability to stay with the patient attentively in an effort to avoid the use of protective devices.
- Instructing them on interventions to try before using protective devices.
- Developing a written schedule for removal of the device, skin care, and exercise.
- Providing a documentation tool to track actual removal of the device and care given.
- Informing them whom to notify should any abnormality be found.

Critical Thinking Questions

1. What would you do if your patient has extremity immobilizers ordered and there is an IV in the right wrist area?
2. What can happen if a restraint is too tight and circulation is impaired in an extremity?

numbness, pain, edema, and loss of sensation or movement. Remove the device immediately and contact the physician if any of these signs occurs.

Think Critically

Your confused patient keeps getting out of her wheelchair. What could you do to try to keep her in the chair? If that does not work, what safety device do you think you would use?

DOCUMENTATION OF THE USE OF PROTECTIVE DEVICES

Describe the objective behaviors you observed (the reason) that led you to believe there was a risk for injury. Document all alternative actions and methods that were tried before placing the device. Document the time and from whom the order for the device was obtained, the type of device applied, the time of application, the name of the person applying the device, and the location of the device on the patient's body. Include the teaching done for the patient and family before placement of the device. Obtain an informed consent as necessary. Document the periodic observations you make of the patient, including sensation, circulation (skin color, distal pulses, capillary refill), and movement. Lastly, record the time when the device was discontinued and your name or the name of the person discontinuing the device. Nursing Care Plan 20-1 describes the care of a patient needing a protective device.

Nursing Care Plan 20-1 Care of the Patient Wearing a Protective Device

SCENARIO Hirosha Kumoto has Alzheimer disease. She is in a room by the nurses' station. While her family was at dinner, you checked on her every 15 minutes. You tried to orient Ms. Kumoto to her surroundings. She is oriented $\times 1$ only. Because Ms. Kumoto's family was not able to spend the night with her, it was decided to apply extremity immobilizers.

PROBLEM/NURSING DIAGNOSIS *Patient is pulling out tubes and trying to get out of bed/Risk for injury related to confusion and disorientation.*

Supporting Assessment Data: *Subjective:* Asks over and over again: "Where am I? Why am I here?" *Objective:* Observed patient trying to get out of bed and climb over the side rails. Patient removed postop dressing, drain, and IV.

Goals/Expected

Outcomes	Nursing Interventions	Selected Rationales	Evaluation
No injury will be sustained during recovery period.	Assess patient's ability to follow medical regimen.	Assessment provides current information and data on patient condition.	<i>Has any injury been sustained?</i> No evidence of injury at this time.
	Try all alternative methods first, such as orienting patient, placing patient in a room by the nurses' station, asking family to sit with patient PRN.	Protective devices are used only if alternative methods fail and are documented as failing.	Family member is with the patient intermittently.
	Obtain an order to apply protective device if above methods are not successful.	An order is required for any application of a protective device that restrains movements.	PRN order obtained from physician.
	Know your facility's policies and procedures before placing device.	Facilities differ on policies and procedures. You must follow your institution's rules.	
	Common practices for use of a protective device are: <ul style="list-style-type: none"> Assess skin condition before applying device. Assess patient every q15-30min: check placement of device, patient positioning, and neurovascular status. 	Assessing skin condition prevents placing item over irritated uncovered area.	Skin intact without redness.
	<ul style="list-style-type: none"> At least every q2h, remove device and provide passive ROM exercises, reposition patient, and reapply protective device as necessary. 	Frequent checks ensure patient has not untied device and that device is in proper position with adequate neurovascular status.	Patient checked q 15 min. No problems noted.
	<ul style="list-style-type: none"> At least every q2h, remove device and provide passive ROM exercises, reposition patient, and reapply protective device as necessary. 	Allows joint movement, helps prevent contractures, prevents skin breakdown, and is refreshing for patient.	Repositioned and ROM provided q 2 hr.
Patient's family will verbalize understanding of need for the use of protective devices.	Continually reevaluate the need for the device. Get the order renewed q 24 hr as needed. Discontinue as soon as no longer necessary.	Devices are discontinued as soon as possible.	No fall or injury sustained. Meeting expected outcome.
	Explain to family the reasons for protective devices. Explain monitoring for safety.	When family understands that the goal is to keep family member safe, they are more likely to agree with use.	<i>Does the family understand?</i> Family verbalizes the need for using protective device when they are not present.
	Explain that all alternatives will be tried before placing protective device.	Communication helps prevent misunderstanding.	Full explanation given to family.
Medically necessary devices will remain in place.	Explain that the device will be removed as soon as is possible.	Reassures family that the patient will not always be restrained.	Expected outcome being met.
	Use least restrictive protective device to ensure outcomes	Reassures family that the patient will not always be restrained.	Intravenous line and dressing remained in place. Expected outcome being met. Continue plan.

Critical Thinking Questions

- The extremity immobilizers help prevent accidental removal of tubes and drains. Would you use any other type of device for Ms. Kumoto? Why or why not? If so, what device would you consider using?
- Does your facility offer any other alternatives to restraint use? Which policy do you feel is best? Why?

Get Ready for the NCLEX® Examination!

Key Points

- Many factors can be controlled in the patient's environment.
- Bright lighting is needed for performing procedures.
- Adequate night lighting is needed to prevent injury when going to the bathroom.
- The most common cause of noise pollution in a health care agency is people.
- Keep rooms neat and clean, while allowing patients to have personal items close to them.
- Privacy is important to a patient's well-being.
- A bed should be neat, clean, dry, and free from wrinkles.
- Bed making should be done, if possible, while the patient is out of bed.
- Safety is a primary concern when caring for patients.
- Falls are the most frequent cause of injury for the elderly patient in an acute care facility.
- **RACE** is the acronym for how to proceed in case of a fire.
- Know your agency's policy for cleaning up a biohazardous spill and handling bioterrorism or chemical terrorism occurrences.
- Protective devices are used only as a last resort.
- Use the least restrictive immobilizing device for the situation.
- A protective device should be applied snugly but should not impair neurovascular status.

Additional Learning Resources

SG Go to your Study Guide for additional learning activities to help you master this chapter content.

evolve Go to your Evolve website (<http://evolve.elsevier.com/deWit/fundamental>) for the following FREE learning resources:

- Animations
- Answer Guidelines for Think Critically boxes and Critical Thinking Questions and Activities
- Answers and Rationales for Review Questions for the NCLEX® Examination
- Glossary with pronunciations in English and Spanish
- Interactive Review Questions for the NCLEX® Examination and more!

Review Questions for the NCLEX® Examination

Choose the best answer for each question.

- Humidity in the hospital is kept between 30% and 50% for the purpose of:
 1. maintaining skin moisture.
 2. keeping the staff comfortable.
 3. humidifying the air.
 4. discouraging microbial growth.
- In making a bed, it is important to remember: (*Select all that apply.*)
 1. to place soiled linens on the floor to avoid contaminating the bed.
 2. to unfold linens on the bed to avoid stirring up air currents.
 3. to return unused linens to the floor's clean linen area to prevent waste.
 4. to raise the bed during the linen change to prevent back strain.
- Which of the following patients might be most likely to suffer a burn if left to tub bathe alone?
 1. An adult female who is to have abdominal surgery tomorrow
 2. An adult male who has been having back pain after a cystoscopy
 3. A patient taking drugs that alter mental awareness
 4. An alert elderly patient who prefers tub bathing
- Which of the following would help prevent the most frequent cause of injury to the elderly patient?
 1. Keeping pathways clear of papers and objects
 2. Grounding all electrical apparatuses in use
 3. Checking temperatures of fluids before serving them
 4. Reviewing the dose and frequency for all ordered medications with the patient
- If a biohazard spill occurs in the dirty utility room on your unit and you are unfamiliar with the product involved, you would first:
 1. dilute the spill with water.
 2. find the MSDS.
 3. don gloves.
 4. call a housekeeper.
- The correct sequence of action in a fire is:
 1. call for help, activate the alarm, rescue a patient in danger, and extinguish the fire.
 2. rescue a patient in danger, activate the alarm, contain the fire, and extinguish the fire.
 3. call the hospital operator, race to close the fire doors, activate the alarm, and evacuate all patients.
 4. race to close the fire doors, activate the alarm, call the hospital operator, and evacuate all patients.
- Which of the following findings **by itself** would indicate that a patient is at risk for falls?
 1. Age over 70
 2. Patient is receiving insulin
 3. Visual impairment
 4. Slapping gait or lurching
- You are considering applying a protective device to your patient. What needs to be done first?
 1. Obtain a physician order.
 2. Discuss your intentions with the patient.
 3. Discuss your intentions with the family.
 4. Determine that all other safety measures have been attempted to try to resolve the safety issue.
- Terrorist attacks can occur from release of biologic or chemical agents or radiation. Bioterrorism is the release of _____ into a community to achieve political and/or military goals. (*Fill in the blank.*)