CHAPTER 12

INPATIENT CARE

INTRODUCTION

There are times when patients are unable to be treated in an outpatient setting. The disease or injury is severe enough to require twenty-four hour care and monitoring to assist the patient back to a self-sustaining level of health and wellness. There are many types of specialized inpatient care areas. This chapter will review the unique qualities and requirements of the medical, surgical, orthopedic, and terminally ill inpatient care areas.

INPATIENT MEDICAL CARE

LEARNING OBJECTIVE:

Evaluate the needs of a medical inpatient.

THE INPATIENT

For purposes of this section, the term medical patient applies to any person who is receiving diagnostic, therapeutic, and/or supportive care for a condition that is not managed by surgical, orthopedic, psychiatric, or maternity-related therapy. This does not mean that patients in other categories are not treated for medical problems. Many surgical, orthopedic, psychiatric, and maternity patients do have secondary medical problems that are treated while they are undergoing management for their primary condition. The basic principles of management are essentially the same for both the inpatient and outpatient.

The medical management of the patient generally consists of laboratory and diagnostic tests and procedures, medication, food and fluid therapy, and patient teaching. For many medical patients during the initial treatment phase, rest is a part of the prescribed treatment.

LABORATORY TESTS AND DIAGNOSTIC PROCEDURES

A variety of laboratory and diagnostic tests and procedures are commonly ordered for the medical patient. The HM will be assigned to prepare the patient for the procedure, collect the specimens, or assist with both. The patient needs a clear and simple explanation about what is to be done and how to assist with the activity. Often the success of the test or procedure is dependent upon the patient's informed cooperation. When collecting specimens, the HM must complete the following procedures:

- Wash hands
- Identify the correct patient
- Collect the correct type and amount of specimen at the correct time
- Place the specimen in the correct container
- Label the container completely and accurately. This may differ somewhat for each facility; local policies should be consulted
- Complete the appropriate laboratory request form
- Document on the patient's record or other forms the date, time, and type of specimen collected; the disposition of the specimen; and anything unusual about the appearance of the specimen or the patient during the collection

When assisting with a diagnostic procedure, the HM must understand the sequence of steps of the procedure and exactly how the assistance can best be provided. Since many procedures terminate in the collection of a specimen, the above principles of specimen collection must be followed.
Following the completion of a procedure or specimen collection, it is the responsibility of the assisting HM to ensure that the patient's safety and comfort are attended to, the physician's orders accurately followed, and any supplies or equipment used appropriately discarded.

**MEDICATIONS**

The treatment of illnesses and injuries often include the use of medication. The responsibility of preparing and administering medications often falls to the HM. The preparation and administration of medications demand special knowledge and skills, integrity, and constant vigilance. A medication error, which also includes omissions, can seriously affect a patient, even to the point of death.

No one individual is expected to know everything there is to know about medications. In every healthcare environment, the HM can access other healthcare providers who can assist in clarifying orders and explaining the purposes, actions, and effects of drugs. Reference materials are also available to all personnel handling medications, including the *Physician's Desk Reference*, the *Nursing Drug Handbook* and a hospital formulary.

It is the HM's responsibility to consult the members of the healthcare team and these references in any area in which the HM is not knowledgeable or wherever there are questions or doubts. HMs are responsible for continued in-service training and knowing and following local policies and procedures regarding the administration of medications. As the HM gains competence and confidence with medication administration, they will be prepared to answer questions that may arise concerning a particular patient's medications.

**FOOD AND FLUID THERAPY**

Loss of appetite, food intolerance, digestive disturbances, lack of exercise, and even excessive weight gain influence a medical patient's intake requirements. Regardless of their medical needs, all patients have basic nutritional requirements that differ from those of the healthy person. As a part of the patient's treatment plan, food is usually prescribed in the form of a special diet. Regardless of the kind of diet prescribed, the patient must be educated as to why certain foods are ordered or eliminated, and how compliance with the dietary regimen will assist in the total care. It is the responsibility of HMs to assist the patient in understanding the importance of the prescribed diet and to ensure that accurate recording of the patient's dietary intake is made on the clinical record.

In some disease conditions, the patient is unable to tolerate food or fluids or may lose these through vomiting, diarrhea, or both. In these cases, replacement fluids as well as nutrients are an important part of the patient's medical management. There are several disease conditions in which fluid restrictions are important aspects of the patient's therapy such as preeclampsia and severe chronic obstructive pulmonary disease (COPD). In both of these instances, accurate measurement and recording of fluid intake and output must be carefully performed. Quite often this becomes a major task of the HM. Additional information relating to food and fluid therapy is presented in Chapter 13, Nutrition and Diet Therapy.

**PATIENT EDUCATION**

In the previous chapter, under "Patient Education," the goals and principles of patient teaching were addressed. When taken in the context of the medical patient, there are some general areas of patient teaching needs that must be considered, particularly as the patient approaches discharge from an inpatient status.
Those areas include the following:

- Follow-up appointments
- Modification in activities of daily living (ADLs) and habits
- Modification in diet, including fluid intake
- Medications and treatment to be continued after discharge
- Measures to be taken to promote health and prevent illness

REST

The primary reason for prescribing rest as a therapeutic measure for the medical patient is to prevent further damage to the body or body part when the normal demand of use exceeds the ability to respond. Prolonged or indiscriminate use of rest, particularly bed rest, is potentially hazardous. Some of the common complications occurring as a result of prolonged bed rest are:

- Circulatory problems (development of blockages) and subsequent skin problems (ulcers)
- Respiratory problems (pneumonia)
- Gastrointestinal problems (anorexia, constipation, and fecal impactions)
- Urinary tract problems (retention, infection, or the formation of calculi)
- Musculoskeletal problems (weakness, atrophy, and the development of contractures)
- Psychological problems (apathy, depression, and temporary personality changes)

The prevention of complications is vital in therapeutic management for the patient on prolonged bed rest. Awareness of potential hazards is the first step in prevention. Alert observations are essential: skin condition, respirations, food and fluid intake, urinary and bowel habits, evidence of discomfort, range of motion, and mood are all critical elements that provide indications of impending problems.

When these findings are properly reported, the healthcare team has time to employ measures that will prevent or arrest the development of preventable complications. Key elements of prevention include turning the patient frequently, providing skin care at least daily if not twice daily, massaging the skin to stimulate circulation, and frequent skin assessments; all must be done IAW local policies and procedures.

THE SURGICAL PATIENT

LEARNING OBJECTIVE:

*Identify the needs of a surgical patient during the preoperative, operative, recovery, and postoperative phases of treatment.*

Surgical procedures are classified into two major categories: emergency and elective. Emergency surgery occurs when surgery is required immediately to save a life or maintain a necessary function. Elective surgery is surgery that needs to be done but can be scheduled at a time beneficial to both the patient and the provider. Regardless of the type of surgery, every surgical patient requires specialized care at each of four phases. These phases are classified as preoperative, operative, recovery, and postoperative.

PREOPERATIVE PHASE

Before undergoing a surgical procedure, the patient should be in the best possible psychological, spiritual, and physical condition. Psychological preparation begins the moment the patient learns of the necessity of the operation. The physician is responsible for explaining the surgical procedure to the patient, including events that can be expected after the procedure. Since other staff personnel reinforce the physician’s explanation, all members of the team must know what the physician has told the patient. In this manner, they are better able to answer the patient’s questions.
All patients approaching surgery are fearful and anxious. The staff can assist in reducing this fear by instilling confidence in the patient regarding the competence of those providing care. The patient is given the opportunity and freedom to express any feelings or fears regarding the proposed procedure. Even in an emergency, it is possible to give a patient and the family psychological support. Often this is accomplished by the confident and skillful manner in which the administrative and physical preoperative preparation is performed.

The fears of pre-surgical patients may arise from their insecurities in the areas of anesthesia, body disfigurement, pain, and/or death. Religious faith is often a source of strength and courage for some patients. If a patient expresses a desire to see a member of the clergy, every attempt should be made to arrange a visit.

**Administrative Preparation**

Except in emergencies, the administrative preparation usually begins before surgery. A step-by-step procedure is outlined in the book *Fundamental Skills and Concepts in Patient Care* in the “Caring for the Patient Undergoing Surgery” chapter. Only the Request for Administration of Anesthesia and for Performance of Operations and Other Procedures (SF 522) will be addressed here. The SF 522 identifies the operation or procedure to be performed; has a statement written for the patient indicating in lay terms a description of the procedure; and includes the signatures of the physician, patient, and a staff member who serves as a witness. A SF 522 must be completed before any preoperative medications are administered. If the patient is not capable of signing the document, a parent, legal guardian, or spouse may sign it. It is customary to require the signature of a parent or legal guardian if the patient is under 18 years of age, unless the patient is married or a member of the Armed Forces. In these latter two cases, the patient may sign the permit, regardless of age.

Typically, the physical preparation of the patient begins in the late afternoon or early evening the day before surgery and at home for those scheduled for same day surgery. As with the administrative preparation, each step is clearly outlined in *Alexander’s Care of the Patient in Surgery*.

**PREOPERATIVE INSTRUCTIONS.**

Preoperative instructions are an important part of the total preparation. The exact time that preoperative teaching should be initiated greatly depends upon the individual patient and the type of surgical procedure. Most experts recommend that preoperative instructions be given as close as possible to the time of surgery. Appropriate preoperative instructions given in sufficient detail and at the proper time greatly reduce operative and postoperative complications.

**OPERATIVE PHASE**

The operative (or intra-operative) phase begins the moment the patient is taken into the operating room. Two of the major factors to consider at this phase are positioning and anesthesia.

**Positioning**

The specific surgical procedure will dictate the general position of the patient. For example, the **lithotomy** position is used for a vaginal hysterectomy, while the **dorsal recumbent** position is used for a herniorrhaphy (hernia repair). Regardless of the specific position the patient is placed in, there are some general patient safety guidelines that must be observed.
When positioning a patient on the operating table, remember the following:

- Whether the patient is awake or asleep, place the patient in as comfortable a position as possible.
- Strap the patient to the table in a manner that allows for adequate exposure of the operative site and is secure enough to prevent the patient from falling, but that does not cut off circulation or contribute to nerve damage.
- Secure all the patient's extremities in a manner that will prevent them from dangling over the side of the table.
- Pad all bony prominences to prevent the development of pressure areas or nerve damage.
- Make sure the patient is adequately grounded to avoid burns or electrical shock to either the patient or the surgical team.

Anesthesia

One of the greatest contributions to medical science was the introduction of anesthesia. It relieves unnecessary pain and increases the potential and scope of many kinds of surgical procedures. Healthcare providers must understand the nature of anesthetic agents and their effect on the human body.

Anesthesia is defined as a loss of sensation that makes a person insensible to pain, with or without loss of consciousness. Some specific anesthetic agents are discussed in Chapter 18, Pharmacy, of this manual. Healthcare providers must understand the basics of anesthesiology and the specific drugs used.

The two major classifications of anesthesia are regional and general.

**REGIONAL ANESTHESIA.**—Regional anesthetics reduce all painful sensations in a particular area of the body without causing unconsciousness. The following is a listing of the various methods and brief description of each.

**Topical Anesthesia** is administered topically (surface of the body part) to desensitize a small area of the body for a very short time period.

**Local blocks** consist of the subcutaneous infiltration of a small area of the body with a desensitizing agent. Local anesthesia generally lasts a little longer than topical.

**Nerve blocks** consist of injecting the agent into the region of a nerve trunk or other large nerve branches. This form of anesthesia blocks all impulses to and from the injected nerves. One type of nerve block is a **digital block** (ring block) which is specific to the digits of the upper and lower extremities.

This is the most common type of anesthesia the HM will administer. Specific information is located in Chapter 21, "Emergency Medical Care Procedures."

**Spinal Anesthesia** consists of injecting the agent into the subarachnoid space of the spinal canal between the third and fourth lumbar space or between the fifth lumbar and first sacral space of the spinal column. This form of anesthesia blocks all impulses to and from the entire area below the point of insertion, provided the patient's position is not changed following injection of the agent.

If the patient's position is changed, for example, from dorsal recumbent to Trendelenburg, the anesthetic agent will move up the spinal column and the level of the anesthesia will also move up. Because of this reaction, care must be exercised in positioning the patient's head and chest above the level of insertion to prevent paralysis (by anesthesia) of the respiratory muscles. In general, spinal anesthesia is considered the safest for most routine major surgery.
Epidural blocks consist of injecting the agent into the epidural space of the spinal canal at any level of the spinal column. The area of anesthesia obtained is similar to that of the subarachnoid spinal method.

The epidural method is frequently used when continuous anesthesia is desired for a prolonged period. In these cases, a catheter is inserted into the epidural space through a spinal needle. The needle is removed, but the catheter is left in place. This provides for continuous access to the epidural space. It is used most frequently in pregnant women during delivery for pain control.

Saddle blocks consist of injecting the agent into the dural sac at the third and fourth lumbar space. This form of anesthesia blocks all impulses to and from the perineal area of the body.

Caudal blocks consist of injecting the agent into the sacral canal. With this method, anesthetic effect or loss of sensation range from the umbilicus to the toes.

GENERAL ANESTHESIA.—General anesthetics cause total loss of sensation and complete loss of consciousness in the patient. They are administered by inhalation of certain gases or vaporized liquids, intravenous infusion, or rectal induction. The induction of inhalation anesthesia is divided into four stages (Fig. 12-1).

- **Stage 1** is the stage of analgesia or induction. During this period the patient experiences dizziness, a sense of unreality, and a lessening sensitivity to touch and pain. At this stage, the patient’s sense of hearing is increased, and responses to noises are intensified.

- **Stage 2** is the stage of excitement. During this period there is a variety of reactions involving muscular activity and delirium. At this stage, the vital signs show evidence of physiological stimulation. It is important to remember that during this stage the patient may respond violently to very little stimulation.

- **Stage 3** is called the surgical or operative stage. There are four levels of consciousness (also called planes) to this stage. It is the responsibility of the anesthetist or anesthesiologist to determine which plane is optimal for the procedure. The determination is made according to specific tissue sensitivity of the individual and the surgical site. Each successive plane is achieved by increasing the concentration of the anesthetic agent in the tissue.

- **Stage 4** is called the toxic or danger stage. This is never a desired stage of anesthesia as cardiopulmonary failure and death can occur. Once surgical anesthesia has been obtained, the healthcare provider must exercise care to control the level of anesthesia. The fourth level of consciousness of stage 3 is demonstrated by cardiovascular impairment that results from diaphragmatic paralysis. If this plane is not corrected immediately, stage 4 quickly ensues.

<table>
<thead>
<tr>
<th>STAGE</th>
<th>PUPIL</th>
<th>RESP</th>
<th>PULSE</th>
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<td><strong>Irregular</strong></td>
<td><strong>Normal</strong></td>
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<tr>
<td><strong>4th Danger</strong></td>
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<td><img src="image" alt="Weak and thready" /></td>
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**Figure 12-1.—Stages of anesthesia**
• **Recovery Stage** or phase consists of the period that begins at the completion of the operation and extends until the patient has recovered from anesthesia. The recovery phase generally takes place in a specialized area called the recovery room or post-anesthesia care unit (PACU). This unit is usually located near the operating room and has access to the following:
  - Surgeons and anesthesiologists or anesthetists
  - Nurses and HMs specially prepared to care for immediate postoperative patients
  - Special equipment, supplies, medication, and replacement fluids

From the time of admission to patient discharge, routine care in the recovery room consists of the following:

- **Measuring temperature and vital signs** (taken immediately upon admission and as ordered by the physician thereafter)
- **Maintaining airway patency**
  - Patients having an artificial airway in place will automatically expel it as they regain consciousness
  - Have a mechanical suction apparatus available to remove excess secretions from the patient’s airway
- **Ensuring the integrity of dressings, tubes, catheters and casts**
  - Locate the presence of any of the above
  - Make notations regarding all drainage, including TACO: type, amount, color, and odor
  - Immediately report the presence of copious amounts of drainage to a nurse or physician
- **Monitoring intravenous therapy** (including blood and blood components)
  - Make notations including type of infusion, rate of flow, and condition of the infusion site
  - Observe patients receiving blood or blood components closely for untoward reactions
- **Monitoring skin color changes**
  - Check dressings and casts frequently to ensure they are not interfering with normal blood circulation to the area
  - Notify a physician or nurse of general skin color changes that may indicate airway obstruction, hemorrhage, or shock
- **Assessing level of responsiveness**
  - For general anesthetics, check for orientation to the environment each time vital signs are taken
  - For other anesthetics, check for return of sensory perception and voluntary movement each time vital signs are taken
- **Observing for side effects of the anesthetic agent**
  - Each agent has the potential for causing specific side effects. Some common major side effects that may occur following the administration of both spinal and general anesthesia consist of the following:
    - Hypotension/shock
    - Respiratory paralysis
    - Neurological complications
    - Headache
    - Cardiac arrest
    - Respiratory depression
    - Bronchospasm/laryngospasm
    - Diminished circulation
    - Vomiting/aspiration
POSTOPERATIVE PHASE

After the patient’s condition has been stabilized in the recovery room, a physician will order the patient’s transfer to another area of the facility. Generally, this transfer is to the unit that the patient was assigned to preoperatively such as the Same Day Surgery (SDS) unit or ward. With surgery and anesthesia leaving unavoidable temporary ill effects on normal physiological functions, every effort must be made to prevent postoperative complications.

Postoperative Goals

From the time the patient is admitted to the recovery room to the time recovery from the operation is complete, there are definite goals of care that guide the entire postoperative course. These goals are as follows:

- Promoting respiratory function
- Promoting cardiovascular function
- Promoting renal function
- Promoting nutrition and elimination
- Promoting fluid and electrolyte balance
- Promoting wound healing
- Encouraging rest and comfort
- Encouraging movement and ambulation
- Preventing postoperative complications

The physician will write orders for postoperative care that are directed at accomplishing the above goals. Although the orders will be based on each individual patient’s needs, there will be some common orders that apply to all patients. These orders will focus on the promotion of certain physiological functions.

Cardiovascular function is assisted by frequent position changes, early movement and ambulation, and in some cases, intravenous (IV) therapy. Renal function is promoted by adequate fluid intake and early movement and ambulation. Nutritional status is promoted by ensuring adequate oral and intravenous intake and by maintaining accurate intake and output records. Elimination functions are promoted by adequate diet and fluid intake. Carefully monitor patients on opioids as these slow down gastrointestinal recovery. Postoperative patients should be advanced to a normal dietary regimen as soon as possible, since this, too, promotes elimination functions. Early movement and ambulation also help to restore normal elimination activities.

In addition to various medications and dressing change procedures ordered by the physician, wound healing is promoted by good nutritional intake and by early movement and ambulation. Rest and comfort are supported by properly positioning the patient, providing a restful environment, encouraging good basic hygiene measures, ensuring optimal bladder and bowel output, and promptly administering pain-relieving medications. Early movement and ambulation are assisted by offering pre-medication, ensuring maximum comfort for the patient, and providing the encouragement and support for ambulating the patient. As indicated in the above discussion, the value of early movement and ambulation, when permissible, cannot be overemphasized.

Respiratory function is promoted by encouraging frequent coughing and deep breathing. Early movement and ambulation also help improve respiratory function. For some patients, oxygen therapy may also be ordered to assist respiratory function.
Postoperative Complications

During the early postoperative phase, the major complications to be guarded against are respiratory obstruction, shock and hemorrhage. As the patient progresses in the postoperative period, other complications to avoid are the development of pneumonia, phlebitis and subsequent thrombophlebitis, gastrointestinal problems ranging from abdominal distention to intestinal obstruction, and wound infections.

Accurate implementation of the physician’s orders and careful observation, reporting, and recording of the patient’s condition will contribute markedly to an optimal and timely postoperative recovery course for the patient.

THE ORTHOPEDIC PATIENT

LEARNING OBJECTIVE:

Explain the needs of the orthopedic patient.

Patients with fractures, deformities, injuries, or diseases of some part of the musculoskeletal system, receive treatment from orthopedic services. Some patients will require surgery, immobilization, or both to correct their condition.

GENERAL CARE

The fundamentals of care for the surgical patient and medical patient apply to orthopedic patients as well. The majority of patients not requiring surgical intervention will be managed by bed rest, immobilization, and rehabilitation. In the military, the typical orthopedic patient is fairly young and in good general physical condition. For these patients, bed rest is prescribed only because other kinds of activity are limited by their condition on admission.

Imobilization

Rehabilitation is the ultimate goal when forming the orthopedic patient’s care plan. Whether the patient requires surgical or nonsurgical treatment, immobilization is often a part of the overall therapy. Immobilization may consist of applying casts or splints, or using traction equipment such as an orthopedic frame called a trapeze. During the Immobilization phase, simple basic patient care is extremely important. Such things as skin care, active-passive exercises, position changes in bed (as permitted), good nutrition, adequate fluid intake, regularity in elimination, and basic hygiene contribute to both the patient’s physical and psychological well-being.

Lengthy periods of immobilization are emotionally stressful for patients, particularly those who are essentially healthy except for the limitations imposed by the condition. Prolonged inactivity contributes to boredom that is frequently manifested by various kinds of acting-out behavior.

Often, the orthopedic patient experiences elevated levels of pain. Orthopedic pain is commonly described as sore and aching. This condition requires long periods of treatment and hospitalization, effective pain management is an important aspect of care. Constant pain, regardless of severity, is energy consuming. The HIM should make every effort to assist the patient in conserving this energy. There are times when the patient’s pain can and should be relieved by medications. There are numerous occasions when effective pain relief can be provided by basic patient-care measures such as proper body alignment, change of position, use of heat or cold (if permitted by a physician’s orders), back rubs and massages, and even simple conversation with the patient. Meaningful activity also has been found to help relieve pain. Whenever possible, a well-planned physical/occupational therapy regimen should be an integral part of the total rehabilitation plan.
CAST FABRICATION

As mentioned previously, immobilization is often a part of the overall therapy of the orthopedic patient, and casting is the most common and well-known form of long-term immobilization. The HM may be required to apply or assist in cast application. This section will discuss the method of applying a short and long arm cast, and a short leg cast.

In applying any cast, the basic materials are the same: webril or cotton flannel, plaster of Paris, a bucket or basin of tepid water, a water source (tap water), protective linen, gloves, a working surface, a cast saw (if removing old cast), and seating surfaces for the patient and the HM. Some specific types of casts require additional material.

NOTE:
When fabricating a cast ensure items used to directly support the casted extremity are made of fabric. Plastics and rubbers, such as the plastic covering on hospital pillows, will melt due to the chemical heat reaction of the cast as it sets.

Short Arm Cast

A short arm cast extends from the base of the metacarpal-phalangeal joints of the hand to one inch below the antecubital space. Depending on the location and type of fracture, the physician may order a specific position for the arm to be casted. Generally, the wrist is in a neutral (straight) position, with the fingers slightly flexed in the position of function.

1. Beginning at the wrist, apply two to three layers of webril (Fig. 12-2A).
2. Then apply webril to the forearm and the hand, making sure that each layer overlaps the other by a half (Fig. 12-2B).
3. Check for lumps or wrinkles and correct any by tearing the webril and smoothing it.
4. Dip the plaster into the water for approximately 5 seconds or until completely submerged in water.

5. Gently massage and squeeze to remove excess water. Do not wring it out as this is called the lamination process.
6. Beginning at the wrist (Fig. 12-2C), wrap the plaster in a spiral motion, overlapping each layer by one-third to one-half.
7. Smooth out the layers with a gentle palmar motion.
8. When applying the plaster, make tucks by grasping the excess material and folding it under as if making a pleat. Successive layers cover and smooth over this fold.
9. When the plaster is anchored on the wrist, cover the hand and the palmar surface before continuing up the arm (Figs. 12-2D and 12-2E).
10. Repeat this procedure until the cast is thick enough to provide adequate support, generally 2 to 3 layers.
11. The final step is to remove any rough edges and smooth the cast surface (Fig. 12-2F).
12. Turn the ends of the cast back and cover with the final layer of plaster, and allow the plaster to set for approximately 15 minutes.
13. Trim with a cast saw, as needed.
Figure 12-2.—Short Arm Cast
**Long Arm Cast**

The procedure for a long arm cast is basically the same as for a short arm cast, except the elbow is maintained in a 90° position, the cast begins at the wrist and ends on the upper arm two inches below the axilla, and in some situations the hand is not wrapped.

**Short Leg Cast**

In applying a short leg cast follow these guidelines:

1. Seat the patient on a table with both legs over the side, flexed at the knee.
2. Instruct the patient to hold the affected leg, with the ankle in a neutral position (90°). Make sure that the foot is not rotated medially or laterally.
3. Beginning at the toes, apply webril (Figs. 12-3A-D) in the same manner as for the short arm cast, ensuring that there are no lumps or wrinkles.
4. Apply the plaster beginning at the base of the metatarsals (Fig. 12-3E), using the same technique of tucks and folds and smoothing as for the short arm cast.
5. Before applying the last layer, expose the toes and fold back the webril (Fig. 12-3F).
6. As the final step, apply a footplate to the plantar surface of the cast, using a generous thickness of plaster (5-7 layers) splints secured with one or two rolls of plaster (Fig. 12-3G). This area provides support to the cast and a weight-bearing surface when used with a cast shoe.

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**Figure 12-3.—Short Leg Cast**

12-12
Whenever a cast is applied, the patient must be given written and verbal instruction for cast care and circulation checks (i.e., numbness, cyanosis, tingling of extremities). Instruct the patient to return immediately should any of these conditions occur.

When a leg cast is applied, the patient must also receive instructions in the proper use of crutches. Depending upon the rehabilitation plan and co-occurring illnesses and injuries, other ambulation tools such as canes and or walkers may also be implemented. The cast will take 24 to 48 hours to completely dry, and it must be treated gently during this time. Since plaster is water-soluble, the cast must be protected with a waterproof covering when bathing or during wet weather.

Nothing must be inserted down the cast (e.g., coat hangers) since this action can cause bunching of the padding and result in pressure sores. If swelling occurs, the cast may be split and wrapped with an elastic wrap to alleviate pressure. Additionally, the object may compromise the skin integrity with a scratch or laceration on skin that will not be cleaned until the cast is removed creating a habitat for bacteria and an opportunity for infection.

**Cast Removal**

A cast can be removed in two ways: by soaking in warm vinegar-water solution until it dissolves, or by cutting. To remove by cutting, cast cutters, spreaders, and bandage scissors are necessary. Cuts are made laterally and medially along the long axis of the cast, and then widened with the use of spreaders. The padding is then cut with the scissors.

**CANES, CRUTCHES AND WALKERS**

Humans have contrived tools or devices that provided them support when they became injured. Upon recovery from a lower extremity orthopedic injury the use of assistive devices can prevent harmful falls. Selection for each individual is based upon the amount of **stability** and support required as well as the patient's strength, cognition, **balance**, and **coordination**.

Patients are often instructed in the use of an assistive device when recovering from an injury or disease during their rehabilitation. To correctly use the device a specific **gait pattern**, which requires great concentration to learn initially, is required in order to learn how to walk correctly.

**Uses of assistive devices include the following**:
- Redistribute and unload a weight-bearing lower limb
- Improve balance
- Reduce lower limb pain
- Provide sensory feedback
- Assist propulsion
- Enable the individual with paralysis to obtain the physiological benefits of upright posture and to maneuver in places inaccessible to a wheelchair
- Notify passersby that the user requires special considerations, such as additional time when crossing streets or taking a seat on the bus

**Types of Assistive Devices**

The following are assistive devices ranked in order of least stable to most stable:
- Canes
- Crutches
- Walkers

**Canes**

Canes are often used to widen the base of support and decrease stress on the opposite lower extremity. Canes can unload the lower limb weight by bearing up to 25% of a patient's body weight. Canes can be made of wood or aluminum; tubular aluminum is lighter than wood. Aluminum canes are adjustable, which is a characteristic that facilitates their use by patients of all sizes.
Types of canes

Generally, the following three types of canes are used, shown in Figure 12-4:

![Types of canes](image)

Cane cane, Straight-handled cane, Quad Cane

Figure 12-4.—Types of canes (left-to-right)
C-cane, Straight-handled cane, Quad Cane


- **C-cane**
  - Most commonly used cane; other names used: the crook-top cane, the J cane, and the single-point cane

- **Functional-grip cane**, or Straight-handled canes
  - Provides better grip and more controlled balance for patients
  - The grip is more comfortable than that of a C cane
  - One example is the ortho cane

- **Quad cane**
  - Provides more support than other standard canes
  - Narrow and wide-based forms are available.
  - For patients with hemiplegia
  - Slow gait is one disadvantage of quad canes.

Fitting

- Keep elbow flexed at side to 15° to 30°
- Use the unaffected side, approximate cane height can be determined by measuring distance from wrist to floor, when standing with arms at the sides (Fig. 12-5)

![Cane Fitting](image)

Figure 12-5.—Cane Fitting

Photograph provided by HMI James Q. Royal, Biomedical Photography Department of Navy Medicine Support Command, Bethesda, MD.

Techniques for Cane Use

- Cane should support 15-25% of patient's body weight
- Hold the cane in the hand on the unaffected side to provide support to the opposite lower limb
- Advance cane simultaneously with the affected leg
- The phrase “up with the good, down with the bad” is often used to help patients recall the appropriate step pattern for stair climbing or traversing a street side curb
Stair-climbing

To climb up stairs (Fig. 12-6):

- Put the cane in the hand closest to the unaffected (i.e. healthy or good) leg
- Step up on the good leg first or
- If possible, grasp the handrail and step up on the good leg first
- Step up on the injured leg and the cane at the same time

To come down stairs (Fig. 12-7):

- Put the cane in the hand closest to the unaffected leg
- Put the cane on the step first
- Step down with the injured leg
- Finally, step down with the good leg

Figure 12-6.—Stair-Climbing with a Cane

Photograph provided by HMI James Q. Royal, Biomedical Photography Department of Navy Medicine Support Command, Bethesda, MD.

Figure 12-7.—Coming Down Stairs with a Cane

Photograph provided by HMI James Q. Royal, Biomedical Photography Department of Navy Medicine Support Command, Bethesda, MD.

Precautions

- If the cane tip gets wet while the patient is outside, make sure the patient dries it off before walking inside on a potentially slick surface. This will help prevent the cane from slipping out from under the patient
- Try to avoid placing the cane on a small rug which can slide out from under the patient
- Check the rubber tip for cracks or excessive wear or the lodging of pebbles and dirt from the outdoors which will make the cane slide on slick surfaces
Advantages

- Adds support and improves balance
- Helps maintain stability and prevent slips and injuries
- Assists in distributing weight evenly
- Can help a patient distribute weight onto the cane and away from hips, knees, and ankles
- Can reduce stress on weak joints and help reduce soreness
- Disadvantages
- Limited weight-bearing capacity
- Much less stable than a walker for moderate to severe balance disorders
- Requires cognition and coordination to use appropriately

Crutches

Crutches provide better stability than do canes and have 2 points of contact with the body.

Types of crutches

There are two basic types of crutches:

- Axillary Crutches - this is the most common type (Fig. 12-8)
  - Wooden or aluminum models can be adjusted easily to the overall height and hand height
  - For temporary use (acute injuries)
  - Requires significant upper body strength
- Forearm Crutches (Canadian crutch, Lofstrand crutch)
  - The increased flexion allows the arm to bear greater weight
  - For active patients with severe leg weakness
  - Offers easier mobility than with axillary crutches

- Brace fixes crutch to forearm and hands grasp handles
- Allows use of hands without dropping crutches

Fitting

Axillary Crutches (Fig. 12-8):

- Axillary, or underarm, crutches are measured with the crutch tips flat on the ground and approximately 6 inches lateral to and 6 inches in front of the foot
- Adjust the handgrip to allow for an approximate 20° to 30° bend at the elbow
- Proper crutch height should allow two to three fingers space between top of the crutch and axilla
- Axilla should not rest on top of the crutch

Figure 12-8.—Axillary Crutch Fitting Position

Photograph provided by HMI James Q. Royal, Biomedical Photography Department of Navy Medicine Support Command, Bethesda, MD.
Forearm Crutches (Canadian crutch, Lofstrand crutch):
- Plant crutch end in front of foot by 6 inches
- Keep elbow slightly flexed to 15° to 30°
- Place cuff at proximal forearm just distal to elbow

Gait Patterns Techniques for crutch use

- **Two-Point Gait:** Similar to the four-point gait. However, it is less stable because only two points of floor contact are maintained. Thus, use of this gait requires better balance
  - Right crutch and left leg together, then
  - Left crutch and right leg together
  - Repeat
  - Allows for natural arm and leg motion during gait, good support and stability from two opposing points of contact

- **Three-Point Gait:** In this type of gait, three points of support contact the floor. It is used when a non-weight-bearing status is required on one lower extremity
  - First move both crutches and the weaker lower limb forward
  - Then bear all your weight down through the crutches
  - Move the stronger or unaffected lower limb forward through the crutches
  - Repeat

- **Four point Gait (most stable):** This gait provides a slow, stable gait as three points of floor contact are maintained. Weight is borne on both lower extremities and typically is used with bilateral involvement due to poor balance, in coordination, or muscle weakness
  - Crutches and legs move independently
  - Advance right crutch
  - Advance left leg
  - Advance left crutch
  - Advance right leg
  - Repeat

- **Swing-Through Gait:** Used for bilateral lower extremity involvement, and trunk disability, e.g. patient with paraplegia, spina bifida. Not as safe as swing-to gait
  - Advance both crutches forward together
  - Weight is shifted onto the hands for support and swing both legs forward at the same time beyond the point of crutch placement
  - Repeat

- **Swing-To Gait:** Requires the use of two crutches or a walker. Indicated for individuals with limited use of both lower extremities and trunk instability
  - Advance both crutches forward together
  - Weight is shifted onto the hands for support and swing both legs forward to meet (not past) the crutches.
  - Repeat

- **Tripod Crutch Gait:** Similar to the Swing-to Gait except crutches are moved one at a time. Requires slightly more coordination and balance than Swing-to gait
  - Advance the right crutch
  - Then the left crutch
  - Then drag both legs to the crutches
  - Repeat
Stair-climbing

To negotiate steps, it is important to learn the safest techniques in ascending and descending stairs to avoid falls and injuries. The phrase “up with the good, down with the bad” is often used to help patients recall the appropriate step pattern for stair climbing or traversing a street side curb.

Going up stairs (Fig. 12-9):

- The uninjured or good leg steps up first as you bear weight through the crutches (“Up with the good”)
- The injured leg follows with the crutches
- Make sure that you are close to the step before you start and that the injured leg clears the step as you step up

Going down stairs (Fig. 12-10):

- Place the crutches on the step below, and then step down with the injured leg (“Down with the bad”)
- The good leg then follows
- Make sure the crutch tips are not too close to the edge of the step
- If a handrail is available, then the crutches can be used as one on the opposite side of the handrail
- The sequence remains the same as without using a handrail

Figure 12-9.—Climbing Stairs with Crutches

Photograph provided by HMI James Q. Royal, Biomedical Photography Department of Navy Medicine Support Command, Bethesda, MD.

Figure 12-10.—Descending Stairs with Crutches

Photograph provided by HMI James Q. Royal, Biomedical Photography Department of Navy Medicine Support Command, Bethesda, MD.
Sitting (Fig. 12-11):
- Back-up to a sturdy chair
- Put both crutches in one hand
- Put the injured foot in front
- With the other hand, feel for the chair arm rest or seat of the chair
- Slowly lower yourself into the chair

Standing (Fig. 12-12):
- Scoot to the front of the chair
- Hold both crutches with the hand closest to the unaffected leg
- Push up and stand on the good leg

Figure 12-11.—Sitting with Crutches
Photograph provided by HMI James Q. Royal, Biomedical Photography Department of Navy Medicine Support Command, Bethesda, MD.

Figure 12-12.—Standing up with Crutches
Photograph provided by HMI James Q. Royal, Biomedical Photography Department of Navy Medicine Support Command, Bethesda, MD.
Precautions

- If the crutches are not new, check the handgrips or rubber crutch tips for signs of wear or cracks
- Go slowly on uneven surfaces such as sidewalks, gravel driveways, grass, etc.
- Be careful while walking over thick carpet. The crutch tips may catch on the carpet, causing you to pitch forward
- If the crutch tips get wet outside, dry them off before walking on tile or linoleum floors inside
- Pick up small throw rugs around the apartment or house. Watch out for objects or cords lying on the floor
- Wear supportive, non-slip shoes with low heels; avoid sandals or house slippers since they can fly off

Advantages

- Moderately stable
- Light weight
- Easily portable
- Appropriate for use on stairs

Disadvantages

- Requires more coordination and balance to use correctly than a walker as well as increased strength and endurance
- Forearm crutches are slightly more difficult to learn to use than standard crutches
- Not appropriate for patients with decreased trunk stability

Walkers

When patients require maximum stability and support from an ambulation device, walkers are typically indicated. Indications include the following:

- Generalized weakness
- Limited ability to bear weight on lower extremity
- Very poor balance particularly elderly people who are unsafe walking with a cane
- Confused patients
- Early gait training
- Other debilitating conditions

Types of walkers

There are five types of walkers:

- Standard Walkers (Figure 12-13A)
  - Very durable and lightweight
  - Typically made of aluminum
  - For ambulation, these walkers require that the user lift the device and move it forward
  - Requires a certain degree of upper extremity strength and coordination

- Wheeled or Rolling Walkers (Fig. 12-13B)
  - Wheels on the front legs promote the walker’s movement
  - Because the patient does not have to lift it, it does not require as much strength and balance to maneuver as the standard walker
  - Users able to walk faster with less attention demand than a standard walker
  - Able to negotiate side-walk cracks easier
• Reciprocal Walkers* (Fig. 12-13C)
  o Has swivel joints that allow each side of the walker to be advanced forward alternatively and independently of the other
  o Allows a more reciprocal gait pattern than other designs, and thus may provide faster and less awkward walking
• One-handed (Hemi Walker) (Fig. 12-13D)
  o Combines the features of a walker and a quad cane
  o Usually are made of tubular aluminum; adjustable, and can be folded
  o Provide a wider base and more lateral support than regular quad canes
  o Indications
    ▪ Hemiplegics
    ▪ Individuals requiring an intermediate step during gait training; often used during the period after use of the parallel bars and before ambulation, which is a time when the patient needs less restrictive assistive devices
  o Used by patients who have limited or no use of one arm or hand

• Stair-climbing Walkers* (Fig. 12-13E)
  o Used to improve stair-climbing ability
  o Requires good balance and strong upper extremities

Fitting:
• Place the front of the walker 12 inches in front of the patient. The walker should partially surround the patient
• The hand grip of the walker should sit at the wrist crease, (ulnar styloid process), or greater trochanter of the patient standing erect with hands down at the side
• Measure the proper height of the walker by having the patient stand upright with elbows flexed 20°
• To confirm that a proper fit has been attained, the walker should be positioned so that the rear feet of the walker are set at about the midpoint of the patient’s shoes (viewed in the sagittal plane)
• The fit should be assessed as the user ambulates to ensure that the walker functions properly with the desired gait pattern

Figure 12-13.—Types of Walkers; A - Standard; B - Rolling; C - Reciprocal; D - Hemi; E - Stair-Climbing

Techniques for walker use (Fig. 12-14):

- The user first advances the walker
- Then the patient steps forward with one foot, followed by the other

Advantages

- Provides the most support for body weight as compared to crutches
- Ease of application
- Provides support for balance (cerebral conditions) and reduced stress (arthritic conditions)
- Folding walkers make for easier storage
- Less exertion with rolling walkers

Disadvantages

- The user first advances the walker
- Slower walking speed
- Abnormal gait pattern
- Creates bad posture and walking habits
- Cannot be safely used to climb stairs
- Awkwardness in narrow passages or crowds
- More cumbersome than crutches, especially non-folding models
- Often have limited usability outdoors

CONCLUSION

Ambulatory devices can help people with disabilities regain strength and mobility as well as to function more freely. Careful consideration to the user’s needs, abilities, limitations, and environment is very important to achieve ideal results. Obtaining the correct style, and fit are also important factors to remember.

As the right fit will be helpful and maybe even speed recovery, the wrong choice may prolong the problem or introduce new ones. Being aware of these factors and having a better understanding of the clinical parameters involved with the proper selection of devices will allow the HM to train the patients to use the device most favorably.

Figure 12-14.—Techniques for Walker Use

Photograph provided by HMI James Q. Royal, Biomedical Photography Department of Navy Medicine Support Command, Bethesda, MD.
THE TERMINALLY ILL PATIENT

LEARNING OBJECTIVE:

Explain the needs of the terminally ill patient.

The terminally ill patient has many needs that are basically the same as those of other patients: spiritual, psychological, cultural, economic, and physical. What differs in these patients may be best expressed as the urgency to resolve the majority of these needs within a limited time frame. Death comes to everyone in different ways and at different times. For some patients, death is sudden following an acute illness and for others death follows a lengthy illness. Death not only affects the individual patient; it also affects family and friends, staff, and even other patients. It is essential that all healthcare providers understand the process of dying and its possible affects on people.

INDIVIDUAL’S PERSPECTIVE ON DEATH

People view death from their individual and cultural value perspectives. Many people find the courage and strength to face death through their religious beliefs. These patients and their families often seek support from representatives of their religious faith. In many cases, patients who previously could not identify with a religious belief or the concept of a Supreme Being may indicate (verbally or nonverbally) a desire to speak with a spiritual representative. There will be patients who, through the whole dying experience, will neither desire nor need spiritual support and assistance. It is the responsibility of the healthcare provider to be attentive and perceptive to the patient’s needs and to provide whatever support personnel the patient may require.

CULTURAL INFLUENCES

An individual’s cultural system influences behavior patterns. When speaking of cultural systems, this refers to certain norms, values, and action patterns of specific groups of people to various aspects of life.

Dying is an aspect of life, and it is often referred to as the final crisis of living. Culturally approved roles frequently encourage specific behavior responses. For example, in the Caucasian, Anglo-European culture, a dying patient is expected to show peaceful acceptance of the prognosis; the bereaved is expected to communicate grief. When people behave differently, the healthcare provider frequently has difficulty responding appropriately.

FIVE STAGES OF DEATH

A theory of death and dying has developed that provides highly meaningful knowledge and skills to all persons involved with the experience. In this theory of death and dying (as formulated by Dr. Elizabeth Kubler-Ross in her book On Death and Dying), it is suggested that most people (both patients and significant others) go through five stages: denial, anger, bargaining, depression, and acceptance.

The first stage, denial, is one of non-acceptance. "No, it can’t be me! There must be a mistake!" It is not only important for the healthcare provider to recognize the denial stage with its behavior responses, but also to realize that some people maintain denial up to the point of impending death. The next stage is anger. This is a period of hostility and questioning: "Why me?" The third stage is bargaining. At this point, people revert to a culturally reinforced concept that good behavior is rewarded. Patients are often heard stating, "I’d do anything if I could just turn this thing around."

Once patients realize that bargaining is futile, they enter into the stage of depression. In addition to grieving because of their personal loss, it is at this point that patients become concerned about their family and "putting affairs in order." The final stage comes when the patient reaches acceptance of death and is prepared for it. It is usually at this time that the patient’s family requires more support than the patient.
It is important to remember that one or more stages may be skipped, the patient may alternate among the various stages in no particular order, and that the last stage may never be reached.

**SUPPORT FOR THE DYING**

Despite the fact that human beings all realize their mortality, there is no easy way to discuss death. To the strong and healthy, death is a frightening thought. The fact that sooner or later everyone dies does not make death easier. There are no procedure books that tell healthcare providers "how to do" death. The "how to" will only come from the individual healthcare provider who understands that patients are people, and that, more than any other time in life, the dying patient needs to be treated as an individual person.

An element of uncertainty and helplessness is almost always present when death occurs. Assessment and respect for the patient’s individual and cultural value system are of key importance in planning the care of the dying. As healthcare personnel, the HMs may approach a dying patient with some feelings of uncertainty, helplessness, and anxiety. The HM may feel helpless in being unable to perform tasks that will keep the patient alive, uncertain that they are doing all that can be done to either make the patient as comfortable as possible or to postpone or prevent death altogether. The HM may feel anxious about how to communicate effectively with patients, their family, or even among the healthcare team. This is a normal response since any discussion about death carries a high emotional risk for the patient as well as the healthcare provider. Communicating provides both strength and comfort to all if done with sensitivity and dignity, and it is sensitivity and dignity that is the essence of all healthcare services.

**PATIENT SAFETY**

**LEARNING OBJECTIVE:**

Identify patient safety concerns in a medical treatment facility.

The primary goal of the healthcare provider is maintaining, sustaining, restoring, and rehabilitating the physical and/or psychological function of the patient. To achieve this goal, healthcare facilities and providers ensure a patient’s environmental and personal safety by developing policies and implementing mechanisms that ensure safe, efficient, and therapeutically effective care. While patient safety is important in all patient care areas, it is of particular importance in the inpatient care setting due to the twenty-four hour care provided in an unfamiliar environment for the patient.

**ENVIRONMENTAL SAFETY**

For purposes of this section, the environment is defined as the physical surroundings of the patient and includes such things as lighting, equipment, supplies, chemicals, architectural structure, and the activities of both patient and staff personnel. Maintaining safety becomes even more difficult when working with people who are ill or anxious and who cannot exercise their usual control over the environment. Loss of strength, decreased sensory input, and disability often accompany illness. Because of this, the HM must be constantly alert and responsive to maintaining a safe environment.

Both The Joint Commission (TJC) and the National Safety Council of the American Hospital Association (AHA) have identified four major types of accidents that continually occur to patients. These hazards consist of falls, electrical shocks, physical and chemical burns, and fire and explosions. Since accidents resulting in physical and chemical burns have initiated numerous consumer claims of healthcare provider and facility malpractice, all healthcare personnel must be thoroughly indoctrinated in the proper use of equipment, supplies, and chemicals.
PATIENT FALL PRECAUTIONS

The most basic item of hospital equipment, the patient’s bed, is a common cause of falls. Falls occur among oriented patients getting in and out of bed at night in situations where there is inadequate lighting. Falls occur among disoriented or confused bed patients when bedrails are not used or are used improperly. Slippery or cluttered floors contribute to patient, staff, and even visitor falls. Patients with physical limitations or patients being treated with sensory-altering medications fall when attempting to ambulate without proper assistance. Falls result from running in passageways, carelessness when going around blind corners, and collisions between personnel and equipment. Unattended and improperly secured patients fall from gurneys and wheelchairs.

Healthcare personnel can do much to prevent the incidence of falls by following some simple procedures. These preventive measures include properly using side rails on beds, gurneys, and cribs; locking the wheels of gurneys and wheelchairs when transferring patients; and not leaving patients unattended. Safety straps should be used to secure patients on gurneys or in wheelchairs. Maintaining dry and uncluttered floors markedly reduces the number of accidental falls. Patients with physical or sensory deficiencies should always be assisted during ambulation. Patients using crutches, canes, or walkers must receive adequate instructions in the proper use of these aids before being permitted to ambulate independently. The total care environment must be equipped with adequate night lights to assist orientation and to prevent falls resulting from an inability to see.

In addition to patient falls, the HM must use proper care in assisting patients in rising and ambulating so that the patient is properly supported and the HM’s back is properly guarded. If patient lift equipment is available, ensure proper training in its use is received. This lessens the chance of the patient or the HM falling.

Per the Bureau of Labor Statistics, healthcare workers often experience musculoskeletal disorders (MSDs) at a rate exceeding that of workers in construction, mining, and manufacturing.

ELECTRICAL SAFETY PRECAUTIONS (OPNAV 5100.23 SERIES)

The expanded variety, quantity, and complexity of electrical and electronic equipment used for diagnostic and therapeutic care have markedly increased the hazards of burns, shock, explosions, and fire. It is imperative that healthcare providers at all levels are alert to such hazards and maintain an electrically safe environment. Knowledge and adherence to the following guidelines will contribute significantly to providing an electrically safe environment for all personnel, whether they are patients, staff, or visitors.

- Do not use electrical equipment with damaged plugs or cords
- Do not attempt to repair defective equipment
- Do not use electrical equipment unless it is properly grounded with a three-wire cord and three-prong plug
- Do not use extension cords or plug adapters unless approved by the Medical Repair Department or the safety officer
- Do not create a trip hazard by passing electrical cords across doorways or walkways
- Do not remove a plug from the receptacle by gripping the cord
- Do not allow the use of personal electrical appliances without the approval of the safety officer
- NEVER put water on an electrical fire
- Do not work with electrical equipment with wet hands or feet
- Have newly purchased electronic medical equipment tested for electrical safety by Medical Repair before putting it into service
• Operate all electrical and electronic equipment according to manufacturer’s instructions
• Remove from service electrical equipment that sparks, smokes, or gives a slight shock. Tag defective equipment and expedite repair
• Call Medical Repair when equipment is not functioning properly or Public Works if there is difficulty with the power distribution system

NOTE:
Be aware that patients with intravenous therapy and electronic monitoring equipment are at high risk from electrical shocks.

PHYSICAL AND CHEMICAL BURN PRECAUTIONS

Patient education should address common causes, identify risks and list precautions to be taken to eliminate the occurrence of burn injuries.

Hot Water Bottles

A common cause of burns particularly in the elderly, diabetics, and patients with circulatory impairments is the hot water bottle. When filling the bottle, the water temperature must never exceed 125°F (51°C). Test the bottle for leaks and cover it so that there is a protective layer of cloth between the patient and the bottle itself.

Heating Pads

Heating pads present a dual hazard of potential burns and electrical shock. The precautions taken when using heating pads are the same for hot water bottles: temperature control and protective cloth padding.

Precautions to be observed to avoid shock include properly maintaining the equipment, conducting pre-use inspections, and ensuring periodic safety inspections are conducted by Medical Repair personnel.

Heat (Bed) Cradle

When using the heat (bed) cradle, protect the patient from burns resulting from overexposure or placement of the equipment too close to the area being treated. As with heating pads, heat cradles present the dual hazard of potential burns and electrical shock. Another hazard to keep in mind is that of fire. Ensure that the bedding and the heat source do not come in direct contact and cause the bedding to ignite.

Heat Lamps

Occasionally, heat lamps are used to accomplish the same results as a heat cradle. Do not use towels, pillow cases, or linen of any kind to drape over heat lamps.

Ice Bags or Cold Packs

Like hot water bottles, ice bags and cold packs (packaged chemical coolant) can cause skin-contact burns. This kind of burn is commonly referred to as frostbite. The precautions taken for applying ice bags and cold baths are the same as those for hot water bottles with regard to attention to elderly, diabetic, and patients with circulatory impairments. Additionally, ice bags should have a towel or other fabric item wrapped around it providing a barrier between the ice bag and the skin.

Hypothermia Blankets

Like ice bags, hypothermia blankets can also cause contact burns. Check the patient’s skin frequently for signs of marked discoloration (indicating indirect localized tissue damage) when using hypothermia blankets. Ensure that the hypothermia blanket does not come in direct contact with the patient’s unprotected skin.

This precaution is easily accomplished by using sheets or cotton blankets between the patient and the blanket itself. When using this form of therapy, follow both the physician’s orders and the manufacturer’s instructions in managing the temperature control of the equipment.
Steam Vaporizers and Hot Foods and Liquids

Steam vaporizers and hot foods and liquids are common causes of patient burns. When using steam vaporizers ensure that the vapor of steam does not flow directly on the patient as a result of the initial equipment positioning or by accidental movement. Patients that are sensitive to hot foods and liquids are more likely burned. Because of lack of coordination, weakness, or medication, patients may be less able to handle hot foods and liquids safely without spilling them.

In the direct patient care units as well as in diagnostic and treatment areas, there is unlimited potential for inflicting burns on patients. When the modern electrical and electronic equipment and the potent chemicals used for diagnosis and treatment are used properly, they contribute to the patient's recovery and rehabilitation. Used carelessly or improperly, these same sources may cause patients additional pain and discomfort, serious illness, or, in some cases, even death.

FIRE AND EXPLOSION PRECAUTIONS

Healthcare facilities have very strict safety features engineered and constructed into them, making them very safe. Along with building safety features, good housekeeping, maintenance, education, and good discipline all contribute to fire prevention. Good housekeeping entails keeping trash within the confines of its containers and emptying them when full. Keeping passageways cleared of clutter, furniture, and equipment. Never leave heat producers items unattended. Good maintenance includes checking, reporting, and ensuring correct repair of electrical equipment, and routine checking of firefighting equipment by qualified personnel.

The education and training of personnel are the most effective means of preventing fires. Good discipline means developing a fire plan to use as outlined in a fire bill, having periodic fire drills, and enforcing no-smoking regulations.

Fire Evacuation Procedures

Staff members should be familiar with the fire regulations at their duty station and know what to do in case of fire. Staff should know how to report a fire, use a fire extinguisher, and evacuate patients. When a fire occurs, there are certain basic rules to follow: (1) The senior person should take charge and appoint someone to notify the fire department and the officer of the day of the exact location of the fire. (2) Everyone should remain calm. (3) All oxygen equipment, vacuum lines, and electrical appliances must be turned off unless such equipment is necessary to sustain life. (4) All windows and doors should be closed and all possible exits cleared. (5) When necessary and directed by proper authority, patients should be removed in a calm and orderly fashion and mustered at the designated relocation area.

Smoking Regulations

By regulation (BUMEDINST 6200.12 series, Tobacco Use in Navy Medical Department Activities), smoking is no longer permitted in Navy treatment facilities. To ensure general safety and awareness of this prohibition, inform patients, visitors, and staff of the facility’s no-smoking status by prominently displaying "No Smoking" signs throughout the hospital especially in rooms and areas where oxygen and flammable agents are used and stored.

GENERAL SAFETY

In addition to the specifics presented earlier, other basic principles are relevant to patient safety including:

- Ensure the patients are familiar with their environment, thus making it less hazardous to them. This familiarization can be accomplished by showing the patients the floor plan of the ward they have been admitted to and by indicating key areas (lounge, bathrooms, nursing station, etc.) that may be of interest to them.
CONCURRENT AND TERMINAL CLEANING

Maintaining cleanliness is a major responsibility of all members of the healthcare team, regardless of their position on the team. Cleanliness not only provides for patient comfort and a positive stimulus, it also impacts on infection control. The HM is often directly responsible for the maintenance of patient care areas. The management of cleanliness in patient care areas is conducted concurrently and terminally.

Concurrent cleaning is the disinfection and sterilization of patient supplies and equipment during hospitalization. Terminal cleaning is the disinfection and sterilization of patient supplies and equipment after the patient is discharged from the unit or hospital. Both concurrent and terminal cleaning are extremely important procedures that not only aid the patient’s comfort and psychological outlook, but also contribute to both efficient physical care and control of the complications of illness and injury.

AESTHETICS

Aesthetically, an uncluttered look is far more appealing to the eye than an untidy one. Other environmental factors, such as color and noise, can also enhance or hinder the progress of a person’s physical condition. In the past, almost all healthcare facilities used white as a basic color for walls and bedside equipment. However, research has shown that the use of color is calming and restful to the patient. Rest is a very important healing agent in any kind of illness. Colors other than white are being added to the hospital palate to help aid in a restful recovery for the patients.

Noise control is another environmental element that requires the HM’s attention. The large number of people and the amount of equipment traffic in a facility serve to create a high noise level that must be monitored. Add to that the noise of multiple radios and televisions, and it is understandable why noise control is necessary if a healing environment is to be created and maintained.

ENVIRONMENTAL HYGIENE

LEARNING OBJECTIVE:
Identify environmental hygiene concerns in a medical treatment facility.

Today’s public is very much aware of the environment and its effect on the health and comfort of human beings. The healthcare setting is a unique environment and has a distinct character of its own. The HM needs to be aware of that character and ensure that the environment will support the optimum in health maintenance, care, and rehabilitation.

In the context of the environment, hygiene may best be described as practices that provide a healthy environment. Environmental hygiene practices include the following three areas of concern: safety (which has already been addressed); environmental comfort and stimuli; and infection control. HMs have certain responsibilities for helping to control the facility’s general environment as well as the patient’s immediate surroundings.

• Be aware of patient sensory impairment and incorporate precautionary procedures into their patient care plan. For example, this principle can be applied to patients who have been given a pain medication, such as morphine or Demerol®. Medications such as these dull body senses. If a patient in this condition wishes to walk around, precautionary actions dictate that the HM either accompany the patient with a patient belt to prevent accidental falls or that the HM does not permit the patient to ambulate until the effects of the medication have stopped

• Understand that all diagnostic and therapeutic measures have the potential to cause a patient harm

• Ensure that all accidents and incidents are documented and analyzed to identify and correct high-risk safety hazards
CLIMATE CONTROL

Another important aspect of environmental hygiene is climate control. Many facilities use air conditioning or similar control systems to maintain proper ventilation, humidity, and temperature control. In facilities without air conditioning, windows should be opened from the top and bottom to provide for cross-ventilation. Ensure that patients are not located in a drafty area. Window sill deflectors or patient screens are often used to redirect drafty airflows. Maintain facility temperatures at recommended energy-conservation levels that are also acceptable as health-promoting temperatures. In addition to maintaining a healthy climate, good ventilation is necessary in controlling and eliminating disagreeable odors.

In cases where airflow does not control odors, room fresheners should be discreetly used. Offensive, odor-producing articles (such as soiled dressings, used bedpans, and urinals) should be removed to appropriate disposal and disinfecting areas as rapidly as possible. Objectionable odors (such as bad breath or perspiration of patients) are best controlled by proper personal hygiene and clean clothing.

In isolation rooms ensure that there is proper negative pressure by checking wall gages and evaluating the airflow. Operating rooms are required to have positive pressure as regulated by gauges. If the gauges are not indicating proper pressures or operating properly, contact Industrial Hygiene and Facilities to verify airflow and to take corrective actions.

LIGHTING

Natural light is important in the care of the sick. Sunlight usually brightens the area and helps to improve the mental well-being of the patient. However, light can be a source of irritation if it shines directly in the patient’s eyes or produces a glare from the furniture, linen, or walls. Adjust shades or blinds for the patient’s comfort. Artificial light should be strong enough to prevent eyestrain and diffused enough to prevent glare.

Whenever possible, provide a bed lamp for the patient. As discussed earlier under “Safety Aspects,” a dim light is valuable as a comfort and safety measure at night. This light should be situated so it will not shine in the patient’s eyes and yet provide sufficient light along the floor so that all obstructions can be seen. A night light may help orient elderly patients if they are confused as to their surroundings upon awakening.

In conclusion, it is important that the HM understand the effects of the environment on patients. People are more sensitive to excessive stimuli in the environment when they are ill, and they often become irritable and unable to cooperate in their care. This is particularly apparent in critical care areas (e.g., in CCUs and ICUs) and isolation, terminal, and geriatric units. HMs must realize and respond to the vital importance of the environment in the total medical management plan of their patients.

SUMMARY

This chapter introduced inpatient care for various types of patients that will be encountered. It has also introduced standard rules of hygiene, applying casts, ambulatory aids, safety, and environment hygiene. Having a good understanding of these areas of patient care will give the HM a good base from which to care for patients in a multitude of inpatient care settings.