UNIT TERMINAL OBJECTIVE

6-6 At the completion of this unit, the paramedic student will be able to integrate the pathophysiological principles and the assessment findings to formulate a field impression and implement a treatment plan for the acute deterioration of a chronic care patient.

COGNITIVE OBJECTIVES

At the completion of this unit, the paramedic student will be able to:

6-6.1 Compare and contrast the primary objectives of the ALS professional and the home care professional. (C-3)
6-6.2 Identify the importance of home health care medicine as related to the ALS level of care. (C-1)
6-6.3 Differentiate between the role of EMS provider and the role of the home care provider. (C-3)
6-6.4 Compare and contrast the primary objectives of acute care, home care and hospice care. (C-3)
6-6.5 Summarize the types of home health care available in your area and the services provided. (C-3)
6-6.6 Discuss the aspects of home care that result in enhanced quality of care for a given patient. (C-1)
6-6.7 Discuss the aspects of home care that have a potential to become a detriment to the quality of care for a given patient. (C-1)
6-6.8 List complications commonly seen in the home care patients which result in their hospitalization. (C-1)
6-6.9 Compare the cost, mortality and quality of care for a given patient in the hospital versus the home care setting. (C-3)
6-6.10 Discuss the significance of palliative care programs as related to a patient in a home health care setting. (C-1)
6-6.11 Define hospice care, comfort care and DNR/ DNAR as they relate to local practice, law and policy. (C-1)
6-6.12 List the stages of the grief process and relate them to an individual in hospice care. (C-1)
6-6.13 List pathologies and complications typical to home care patients. (C-1)
6-6.14 Given a home care scenario, predict complications requiring ALS intervention. (C-3)
6-6.15 Given a series of home care scenarios, determine which patients should receive follow-up home care and which should be transported to an emergency care facility. (C-3)
6-6.16 Describe airway maintenance devices typically found in the home care environment. (C-1)
6-6.17 Describe devices that provide or enhance alveolar ventilation in the home care setting. (C-1)
6-6.18 List modes of artificial ventilation and an out-of-hospital situation where each might be employed. (C-1)
6-6.19 List vascular access devices found in the home care setting. (C-1)
6-6.20 Recognize standard central venous access devices utilized in home health care. (C-1)
6-6.21 Describe the basic universal characteristics of central venous catheters. (C-1)
6-6.22 Describe the basic universal characteristics of implantable injection devices. (C-1)
6-6.23 List devices found in the home care setting that are used to empty, irrigate or deliver nutrition or medication to the GI/ GU tract. (C-1)
6-6.24 Describe complications of assessing each of the airway, vascular access, and GI/ GU devices described above. (C-1)
6-6.25 Given a series of scenarios, demonstrate the appropriate ALS interventions. (C-3)
6-6.26 Given a series of scenarios, demonstrate interaction and support with the family members/ support persons for a patient who has died. (C-3)
6-6.27 Describe common complications with central venous access and implantable drug administration ports in the out-of-hospital setting. (C-1)
6-6.28 Describe the indications and contraindications for urinary catheter insertion in an out-of-hospital setting. (C-1)
6-6.29 Identify the proper anatomy for placement of urinary catheters in males or females. (C-2)
6-6.30 Identify failure of GI/ GU devices found in the home care setting. (C-2)
6-6.31 Identify failure of ventilatory devices found in the home care setting. (C-2)

6-6.32 Identify failure of vascular access devices found in the home care setting. (C-2)
6-6.33 Identify failure of drains. (C-2)
6-6.34 Differentiate between home care and acute care as preferable situations for a given patient scenario. (C-3)
6-6.35 Discuss the relationship between local home care treatment protocols/ SOPs and local EMS Protocols/ SOPs. (C-3)
6-6.36 Discuss differences in individuals ability to accept and cope with their own impending death. (C-3)
6-6.37 Discuss the rights of the terminally ill. (C-1)

AFFECTIVE OBJECTIVES
At the completion of this unit, the paramedic student will be able to:

6-6.38 Value the role of the home-care professional and understand their role in patient care along the life-span continuum. (A-2)
6-6.39 Value the patient's desire to remain in the home setting. (A-2)
6-6.40 Value the patient's desire to accept or deny hospice care. (A-2)
6-6.41 Value the uses of long term venous access in the home health setting, including but not limited to: (A-2)
a. Chemotherapy
b. Home pain management
c. Nutrition therapy
d. Congestive heart therapy
e. Antibiotic therapy

PSYCHOMOTOR OBJECTIVES
At the completion of this unit, the paramedic student will be able to:

6-6.42 Observe for an infected or otherwise complicated venous access point. (P-1)
6-6.43 Demonstrate proper tracheotomy care. (P-1)
6-6.44 Demonstrate the insertion of a new inner cannula and/ or the use of an endotracheal tube to temporarily maintain an airway in a tracheostomy patient. (P-1)
6-6.45 Demonstrate proper technique for drawing blood from a central venous line. (P-1)
6-6.46 Demonstrate the method of accessing vascular access devices found in the home health care setting. (P-1)

DECLARATIVE

I. Introduction
- A. Epidemiology of home care
  - 1. Patients receiving home care
    - a. Supportive statistics
  - 2. ALS responses to home care patients
    - a. Role of the ALS provider
    - b. Role of the home care provider
    - c. Supportive statistics
    - d. Typical responses
      - (1) Respiratory failure
      - (2) Cardiac decompensation
      - (3) Septic complications
      - (4) Equipment malfunction
      - (5) Other medical pathologies exacerbated in the home care setting
  - 3. Medical devices commonly found in the home care setting
    - a. Supportive statistics
      - (1) National (number of trach patients, home ventilator patients, etc.)
      - (2) Local
    - b. Examples of home care problems requiring intervention by a home health practitioner of physician
      - (1) Chemotherapy
      - (2) Pain management
      - (3) Hospice care
      - (4) Others
    - c. Examples of home care problems requiring acute intervention
      - (1) Inadequate respiratory support
      - (2) Acute respiratory events
      - (3) Acute cardiac events
      - (4) Acute sepsis
      - (5) GI/ GU crisis
  - 4. Injury control and prevention in the home care setting
    - a. Haddon's matrix
    - b. Performance versus task demand
    - c. Infection control in the home care setting
- B. Types of home care patients
  - 1. Airway pathologies
    - a. Inadequate pulmonary toilet
    - b. Inadequate alveolar ventilation
    - c. Inadequate alveolar oxygenation
  - 2. Circulatory pathologies
    - a. Alterations in peripheral circulation
  - 3. GI/ GU pathologies
    - a. Ostomies
    - b. Catheters

c. Home dialysis
4. Infections
   a. Cellulitis
   b. Sepsis
5. Wound care
   a. Surgical wound closure
   b. Decubitus wounds
   c. Drains
6. Hospice care
7. Maternal/ child care
   a. Apnea monitors
   b. The new parent
8. Progressive dementia in the patient at home
9. Psychosocial support of the home care family
10. Chronic pain management
11. Home chemotherapy
12. The transplant candidate

II. General system pathophysiology, assessment and management
   A. Assessment
      1. Scene size-up
         a. Body substance isolation
            (1) Infectious waste issues in the home care environment
         b. Scene safety
            (1) Pets
            (2) Firearms and other home protection devices
            (3) Home hazards
         c. Milieu
            (1) Ability to maintain a healthy environment
            (2) Adequate nutritional support available
            (3) Adequate basic needs (heat, electricity, etc.)
      2. Initial assessment
      3. Focused history and physical examination
         a. Critical findings
            (1) Rapid assessment and transport
            (2) Detailed assessment
            (3) On-going assessment
         b. Non-critical findings
            (1) Focused history and physical examination
               (a) Medication interactions in home care
               (b) Using the available home health history
               (c) Accessing the home health history
               (d) Compliance issues
               (e) Assessing dementia
            (2) Other intervention and transport considerations
               (a) Notification of family or caretakers

(b) Securing the home
4. On-going assessment
5. Comprehensive assessment
   a. Inspection
   b. Palpation
   c. Auscultation
6. Differential diagnosis and continued management

B. Management/ treatment plan
1. Replacing home health treatment modalities with ALS modalities
   a. Airway and ventilatory support
   b. Circulatory support
   c. Pharmacological intervention
   d. Non-pharmacologic interventions
   e. Transport considerations
      (1) Home care follow-up
      (2) Referral to other public service agencies
      (3) Notification of family medical doctor or home health agencies

III. Specific acute home health situations
A. Inadequate respiratory support
1. Supportive statistics
   a. Home oxygen
   b. COPD patients
   c. Home ventilation patients
2. Review of specific anatomy and physiology
   a. Respiratory anatomy and physiology as it relates to
      (1) CPAP
      (2) Positive pressure ventilation
3. Review pathophysiology
   a. Increased risk of airway infections in the respiratory compromised patient
   b. Progression of chronic respiratory diseases
   c. Chronic pathologies requiring home respiratory support
      (1) COPD
      (2) Bronchopulmonary dysplasia
      (3) Patients awaiting lung transplant
      (4) Cystic fibrosis
      (5) Sleep apnea
   d. Increased respiratory demand making current support inadequate
      (1) Respiratory infections
      (2) Other factors affecting respiratory demand
   e. Increased secretions
   f. Obstructed or malfunctioning airway devices
   g. Improper application of medical device
4. Medical therapy found in the home setting
   a. Home oxygen therapy
      (1) Oxygen concentrators

(2) Oxygen in cylinders
(3) Liquid oxygen systems
b. CPAP
(1) Mask CPAP
(2) Nasal CPAP
(3) BiPAP
c. Artificial airways
(1) Tracheotomies
d. Home ventilation
(1) Volume ventilators
(2) Pressure ventilators
(3) Negative pressure ventilation devices (poncho ventilators)
5. Assessment findings
a. Work of breathing
b. Tidal volume
c. Peak flow
d. Oxygen saturation
e. Breath sounds
6. Management
a. Improving airway patency
(1) Repositioning airway devices
(2) Removing secretions from airway devices
(3) Replacing a home airway device with an ALS device
(a) ET tube replacing trach tube
b. Improving ventilation
(1) Removing from a home care device and using positive pressure ventilation
(2) Adjusting home care devices fit or settings to improve ventilations
c. Improving oxygenation
(1) Replacing oxygen delivery devices
(2) Changing the flow rate of oxygen delivery devices
d. Transport considerations
e. Psychological support/ communication strategies
(1) Communication with the intubated patient
(2) Communication using a "talking trach"

B. Acute cardiovascular and vascular access
1. Epidemiology
a. Supportive statistics
(1) Types and numbers of central venous access devices found in the home
(2) Types and numbers of dialysis patients found in the home
2. Review of specific anatomy and physiology
a. Cardiovascular anatomy and physiology as it relates to
(1) Central venous access
(2) Dialysis shunts
(3) Peripheral circulation
(4) Cardiovascular decompensation

3. Review pathophysiology
   a. Cardiomyopathy
   b. Post MI cardiac insufficiency
   c. Anticoagulation associated with percutaneous or implanted devices
   d. Embolus formation associated with indwelling devices, stasis and inactivity
   e. Air embolus associated with central venous access devices
   f. Obstructed or malfunctioning vascular access devices
   g. Infected access site
   h. Obstructed dialysis shunts
4. Medical therapy found in the home setting
   a. Vascular access devices
      (1) Surgically implanted medication delivery devices (Mediports, etc.)
      (2) Peripheral vascular access devices (PICC, Intracath, etc.)
      (3) Central vascular access devices (Hickman, Groshon, etc.)
   b. Dialysis shunts
   c. Hemodynamic support
   d. Anticoagulant therapy
5. Assessment findings
   a. Infection
   b. Hemodynamic compromise
   c. Hemorrhage
   d. Embolus
      (1) Air
      (2) Thrombus
      (3) Plastic or catheter tip
   e. Stable versus unstable angina

C. GI/ GU crisis
1. Epidemiology
   a. Supportive statistics referencing numbers of devices in the out-of-hospital setting
      (1) Urinary catheters or urostomies
      (2) Benign prostetic hypertrophy
      (3) Indwelling nutritional support device (peg tube, G-tube)
      (4) Colostomies
      (5) NG tubes
2. Review of specific anatomy and physiology
   a. GI/ GU anatomy and physiology as it relates to
      (1) Urinary tract infections and urosepsis
      (2) Bowel obstruction
      (3) Aspiration of gastric contents
3. Review pathophysiology
   a. Urosepsis
   b. Urinary retention
   c. Aspiration of gastric contents secondary to
      (1) Non-patent gastric tube
      (2) Improper nutritional support via feeding tube
      (3) Patient positioning with the above devices

d. Bowel obstruction in the patient with gastric devices
e. Obstructed or malfunctioning gastric devices

4. Medical therapy found in the home setting
   a. Urinary tract
      (1) External urinary catheters
      (2) Indwelling urinary catheters
      (3) Suprapubic catheters
      (4) Urostomy
   b. Gastric emptying or feeding
      (1) NG tubes
      (2) Feeding tubes
      (3) Peg tubes, J tubes, etc.
      (4) Colostomy
5. Assessment findings
   a. Abdominal pain
   b. Distention
   c. Bowel sounds
   d. Palpation of bladder
   e. Color/ character/ amount of urine
6. Management
   a. Aspiration
   b. Urinary retention
      (1) Hypotension
      (2) Catheterization
   c. Bowel obstruction
   d. Dysfunctional device
   e. Transport considerations
      (1) Positioning
      (2) Positioning of devices for proper drainage and prevention of reflux

D. Acute infections
1. Epidemiology
   a. Supportive statistics
      (1) Mortality rates from sepsis and severe peripheral infections
      (2) Increased rate of infections in the elderly, chronically ill and homebound
      (3) Decreased ability to perceive pain or perform self-care in many homebound populations
2. Review of specific anatomy and physiology
   a. Immune system
   b. Normal wound healing
3. Review pathophysiology
   a. Increased risk of airway infections in the immunocompromised patient
   b. Poor peripheral perfusion results in decreased healing and increased peripheral infections
   c. Sedentary existence leads to skin breakdown and peripheral infections
   d. Percutaneous and implanted medical devices increase risk for infections and sepsis

e. Patients discharged to home with open wounds and incisions
f. Chronic diseases may further impair healing
g. Poor nutrition, hygiene or ability to care for self impact infection rates
h. Abscesses
i. Cellulitis

4. Medical therapy found in the home setting
   a. Open wounds
      (1) Dressings
      (2) Wound packing
      (3) Drainage
   b. Drains found in wounds
      (1) Penrose drains
      (2) Jackson-Pratt drains
      (3) Others
   c. Wound closure techniques
      (1) Sutures
      (2) Wires
      (3) Staples
      (4) Others
5. Assessment findings
   a. Signs of healthy wound healing
   b. Signs of superficial infections
   c. Signs of major infections
   d. Signs of sepsis
6. Management
   a. Sterile dressing (redressing) after wound evaluation
   b. Transport considerations
   c. Psychological support/ communication strategies

E. Maternal/ child
1. Epidemiology
   a. Supportive statistics
      (1) Birth rates and average length of hospitalization
      (2) Rates for post partum bleeding
      (3) Rates for infant septicemia
2. Review of specific anatomy and physiology
   a. Childbirth and post partum changes
   b. Newborn pathophysiology as it relates to
      (1) Thermoregulation
      (2) Respiratory drive
      (3) Immune response
3. Review pathophysiology
   a. Infantile apnea
      (1) Review apnea monitoring
   b. Septicemia in the newborn
   c. Other newborn pathophysiologies
   d. Post partum hemorrhage

e. Post partum depression
f. Other post partum pathophysiologies
(1) Sepsis
(2) Pulmonary embolus

4. Assessment findings
a. Signs of sepsis
b. Failure to thrive
c. The well-baby exam
d. Post partum assessment

5. Management
a. Transport considerations
b. Psychological support/ communication strategies

F. Hospice/ comfort care

1. Epidemiology
a. Supportive statistics
(1) Hospice care statistics

2. Review of specific terms
a. Palliative care
b. Comfort care
c. Hospice care
d. DNR/ DNAR
e. Durable power of attorney

3. Review material
a. The grief response
b. Local DNR or related legislation
c. Medical direction considerations

4. Medical therapy found in the home setting
a. Pain control in the terminal patient
(1) Therapy for overmedication

5. Management
a. Transport considerations
b. Psychological support/ communication strategies