

[Perrin 2e IRM]

Chapter 2 Care of the Critically Ill Patient

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Table 2-1 Description of the Critical Care Pain Observation Tool

Table 2-2 American Association of Critical Care Nurses Sedation Assessment Scale

Table 2-3 Ventilator Adjusted Motor Assessment Scoring Scale (VAMASS)

Table 2-4 CAM-ICU Worksheet

Table 2-5 Body Mass Index (BMI) Calculation

Table 2-6 Harris-Benedict Equations for Calculating Basal Energy Expenditure (BEE)

Learning Outcome 1

Explain the characteristics of the critically ill patient described in the AACN synergy model.

Concepts for Lecture

1. Critically ill patients are at high risk for life-threatening problems, and nurses must often focus on specific life-sustaining treatments. However, critically ill

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- patients have basic needs as well.
2. The American Association of Critical Care Nurses (AACN) defines critically ill patients as “those who are at high risk for actual or potential life threatening health problems. The more critically ill the patient is, the more likely he or she is to be highly vulnerable, unstable and complex, thereby requiring intense and vigilant nursing care.”
 3. According to the synergy model (Figure 2-1), the AACN postulates that when the needs of the patient and family drive the competencies required by the nurse, optimal patient outcomes can be achieved. Further, the model identifies **eight patient characteristics** that can be scored along the health-illness continuum:
 - Resiliency: “The ability to bounce back quickly after insult.”
 - Vulnerability: “Susceptibility to actual or potential stressors.”
 - Stability: “The ability to maintain a steady state equilibrium.”
 - Complexity: “The intricate entanglement of two or more systems (e.g., body, family).”
 - Predictability: “A characteristic that allows one to predict a certain course of events or course of illness.”
 - Resource availability: “Extent of resources the patient, family, and community bring to the situation.”
 - Participation in care: “Extent to which patient and/or family engage in care.”
 - Participation in decision making: “Extent to which patient and/or family

engage in decision making.”

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1. Characteristics of critically ill patients (synergy model)

- Resiliency
- Vulnerability
- Stability
- Complexity
- Predictability
- Resource availability
- Participation in care
- Participation in decision making

Suggested Strategies for Classroom Learning

Considering each of the characteristics of critically ill patients, ask students to think about and describe patients they have encountered who exhibit these characteristics at both ends of the continuum. Discuss implications for care based on possession of these characteristics.

Learning Outcome 2

Discuss the concerns expressed by critically ill patients.

Concepts for Lecture

1. Critical care nurses have long focused on creating environments conducive to the comfort and healing of their patients. To that end, nurses have tried to limit stressors for their patients. However, research has indicated that what nurses *thought* would be stressful for patients varied considerably from what patients *reported* to be stressful to them.
2. Patients described as the most stressful to them:
 - being thirsty
 - having tubes in the mouth and nose
 - not being able to communicate
 - being restricted by tubes/lines
 - being unable to sleep
 - not being able to control themselves

PowerPoint Lecture Slides

1. Stressors reported by critically ill patients
 - being thirsty
 - having tubes in the mouth and nose
 - not being able to communicate
 - being restricted by tubes/lines
 - being unable to sleep
 - not being able to control themselves

Suggested Strategies for Classroom Learning

Ask students to consider how, in the case of each stressor identified by critically ill patients, the nurse might intervene to reduce stress for the patient.

Learning Outcome 3

Describe strategies a nurse might utilize to communicate with a ventilated patient.

Concepts for Lecture

1. Ventilated patients who appear to be sedated and minimally responsive often recall the communication efforts of their nurses. Most research studies demonstrate that critical care nurses spend little time communicating with sedated patients. Some researchers have postulated that although nurses know that communication is important, it is easily overlooked in the context of other important patient care needs. Nurses do not ignore the needs of their patients, but many try to anticipate patients' needs and respond to them automatically.
2. Nurses communicate with sedated patients for specific purposes, such as:
 - orienting patients to their surroundings and what has happened to them
 - describing tasks or procedures that will be done
 - providing reassurance
 - apologizing for or recognizing discomfort
 - obtaining a response
 - providing intentional and unintentional distractions during procedures
3. Communication can be very frustrating with responsive ventilated patients.

Although there are a variety of possible communication adjuncts for use with

responsive patients, they are infrequently used. Most commonly, critical care nurses communicate with responsive ventilated patients by encouraging:

- head nods in response to yes/no questions
 - mouthing words
 - gesturing
 - writing
4. Evidence based interventions to facilitate communication with ventilated patients include:
- Ask patients routinely about their feelings.
 - Ask permission before beginning nursing care and procedures.
 - Evaluate patients' understanding of the information conveyed.
 - Inform patients of their surroundings and the plan of care.
 - Approach each patient with a kind, patient manner.
 - Provide writing materials and read the words as they are written.

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1. Purposes for communicating with ventilated patients
 - orienting patients to their surroundings and what has happened to them
 - describing tasks or procedures that will be done
 - providing reassurance
 - apologizing for or recognizing discomfort
 - obtaining a response
 - providing intentional and unintentional distractions during procedures

2. Strategies for communicating with ventilated patients

- Ask patients routinely about their feelings.
- Ask permission before beginning nursing care and procedures.
- Evaluate patients' understanding of the information conveyed.
- Inform patients of their surroundings and the plan of care.
- Approach each patient with a kind, patient manner.
- Provide writing materials and read the words as they are written.

Suggested Strategies for Classroom Learning

Have students work with a partner. Have one student act as the nurse and the other act as a nonverbal patient. Ask the “patient” to communicate to the “nurse” that he or she has something sharp pinching in the buttocks. (For example, the patient could be laying on a tip of a syringe from a needle or some other piece of equipment that was inadvertently left under the patient during care.) Upon reconvening, ask how the “patient” was able to convey the information and how challenging it was for the “nurse” to understand what the patient was trying to communicate.

Learning Outcome 4

Explain the use of sedation, pain, and delirium scales with critically ill patients.

Concepts for Lecture

1. **Sedatives** are used in the critical care setting to treat anxiety and agitation and to provide amnesia. Although the use of sedatives can reduce the stress response and

- improve the patient's tolerance to interventions, sedatives should be used only after "providing adequate analgesia and treating reversible physiologic causes" (National Guidelines Clearinghouse, 2002).
2. A sedation goal or end point should be established early and redefined regularly for each patient (National Guidelines Clearinghouse, 2002). Whereas for one sedated patient the goal of care might be to have the patient calm and easy to arouse with normal sleep-wake cycles, ventilated patients may require deeper sedation.
 3. It is essential to use reliable scales for assessment. Common factors on sedation scales include the following:
 - Consciousness—patient awareness of self and surroundings (may use the Glasgow Coma Scale or the Reaction Level Scale to assess)
 - Agitation—patient restlessness characterized by nonpurposeful movement (most commonly assessed by Ramsay Sedation Scale and the Riker Sedation/Agitation Scale)
 - Anxiety—"subjective feeling of distress and anguish"
 - Sleep
 - Patient-ventilator synchrony
 4. Examples of sedation scales
 - Table 2-2 AACN Sedation Assessment Scale
 - Table 2-3 Ventilator Adjusted Motor Assessment Scoring Scale (VAMASS)

Use of sedation scales allows objective assessment of patients and hopefully prevents patients from being sedated too deeply for too long.

5. Nurses and families consistently identify **pain** as one of the major problems for patients in critical care units. Unfortunately, although it is assumed that all patients in critical care will experience some pain or discomfort, pain control is frequently inadequate. Unresolved pain does not just cause physical and psychic discomfort for the patient. It can impair the patient's recovery from her illness as well. Therefore, it should be a priority for the critical care nurse to perform a pain assessment for each patient on a regular basis.
6. A basic pain assessment should include, at a minimum, assessment of the intensity and location of pain. If possible, the nurse should also ask the patient to do the following:
 - Rate the pain on a scale of 0 to 10
 - Point to the location of the pain
 - Indicate where the pain radiates to
 - Describe the characteristics of the pain
 - Indicate if there are any associated symptoms—nausea, shortness of breath, dizziness
 - State what aggravates the pain—Does it hurt more when the patient breathes?
 - Consider what alleviates the pain—Does the pain decrease when the head of bed is elevated?

The nurse must remember that the patient's self-report of pain is the most reliable indicator of type and amount of pain, so it is most important to gain this information from the patient if at all possible.

7. If the patient is unable to communicate his level of pain, the critical care nurse must rely on other ways to identify the patient's pain. From a hierarchical perspective, the following assessment techniques should be used to assess pain:

- Patient self-report
- Search for a potential cause of a change in behavior
- Observation of patient behaviors
- Surrogate report of patient's pain or patient's behavior
- Analgesic trial

8. Behaviorally based tools for assessment of pain in critically ill patients may include:

- Facial expressions
- Body movements
- Muscle tension
- Compliance with ventilation
- Vocalization
- Physiologic parameters

(See Table 2-1, Description of the Critical-Care Pain Observation Tool.)

9. **Delirium** is the sudden onset of disturbances in cognition, attention, and perception that fluctuate over time. Delirium can manifest as hyperactive (agitated), hypoactive (also known as quiet and often not identified at all or misdiagnosed as depression), or mixed. It is likely that the mixed type of delirium is the most prevalent in ICUs. Every critically ill patient should be assessed for delirium at least once per shift.

10. Initially, an arousal or sedation/agitation assessment (VAMASS or Richmond Sedation/Agitation Scale) should be performed. If appropriate, the patient should then be assessed using a delirium assessment scale such as the Confusion Assessment Method of the Intensive Care Unit (CAM-ICU), which has been demonstrated repeatedly as being both reliable and valid. (See Table 2-4.)
11. To score positive for delirium on the CAM-ICU, the patient must display:
 - acute changes or a fluctuation in mental status (feature 1)
 - accompanied by inattention (feature 2) AND
 - either disorganized thinking (feature 3) OR
 - a level of consciousness other than alert (feature 4)

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1. Sedation assessment

Common factors included on sedation assessment scales include the following:

- Consciousness—patient awareness of self and surroundings
- Agitation—patient restlessness characterized by nonpurposeful movement
- Anxiety—“subjective feeling of distress and anguish”
- Sleep
- Patient-ventilator synchrony

2. Examples of sedation scales

- [Insert Table 2-2 AACN Sedation Assessment Scale]

3. Examples of sedation scales

- [Insert Table 2-3 Ventilator Adjusted Motor Assessment Scoring Scale (VAMASS)]
4. A basic pain assessment should include, at a minimum, assessment of the intensity and location of pain. If possible, the nurse should also ask the patient to do the following:
- Rate the pain on a scale of 0 to 10
 - Point to the location of the pain
 - Indicate where the pain radiates to
 - Describe the characteristics of the pain
 - Indicate if there are any associated symptoms—nausea, shortness of breath, dizziness
 - State what aggravates the pain—Does it hurt more when the patient breathes?
 - Consider what alleviates the pain—Does the pain decrease when the head of bed is elevated?
5. Hierarchy of pain assessment
- Patient self-report
 - Search for a potential cause of a change in behavior
 - Observation of patient behaviors
 - Surrogate report of patient’s pain or patient’s behavior
 - Analgesic trial
6. Behaviorally based tools for assessment of pain in critically ill patients may include:
- [Insert Table 2-1 Description of the Critical-Care Pain Observation Tool]

7. Delirium assessment tools

- [Insert Table 2-4 CAM-ICU Worksheet]

Suggested Strategies for Classroom Learning

Divide the group into partners. Pass out cards indicating what condition the “patient” has and ask each student to role play the “patient” during the assessment. Have the partners perform a full pain assessment on one another and document the assessment. Discuss challenges associated with the assessment of pain.

Learning Outcome 5

Evaluate the effectiveness of pharmacological and nonpharmacological management of sedation, pain, and delirium in the critically ill patient.

Concepts for Lecture

1. Management of sedation:

Benzodiazepines provide both sedation and amnesia and may provide an analgesic sparing effect. Older patients and those with hepatic or renal failure have slower clearance of benzodiazepines and will require adjustments of dosages. Evidence indicates that systematic tapering of the dose or daily interruption of sedation (a “sedation vacation”) with retitration should be used to minimize the effects of prolonged sedation.

Meanwhile, nurses must remain up to date with current research on sedation because there is also some indication that lack of sedation may increase patients’ suffering, stress, and hallucinations.

2. Medications commonly used for sedation:

- Propofol (Diprivan)—very short duration of action; can be used when sedation is required but rapid awakening for neurological assessment or extubation is desired; administered as an IV infusion; an analgesic must be used concurrently for pain management; must monitor serum triglyceride levels after 2 days of therapy.
- Lorazepam (Ativan)—antianxiety, sedative, anticonvulsant, amnesiac; slower onset but longer duration of action than midazolam; may be administered by intermittent injection or continuous infusion; dosage should be titrated to the patient's level of anxiety/agitation using a sedation assessment scale.

3. Complementary and alternative therapies for treatment of anxiety:

- music therapy
- imagery
- presence

4. Management of pain:

Analgesics are drugs used to control pain. Ideally analgesic medications should be administered before pain develops because it is easier to prevent pain than to treat established pain. Therefore, the nurse should administer analgesia before a procedure that will cause pain.

5. For optimal control of pain, the nurse should use both opioid and nonopioid medications because they work differently to relieve pain and they have complementary effects. Opioids work in the central nervous system and nonsteroidal anti-inflammatory medications and acetaminophen work in the

peripheral nervous system. Opioids are the drugs of choice for the moderate to severe pain usually experienced by critically ill patients

6. Medications often used for pain control include:

- morphine sulfate—narcotic of choice in critical care; exerts analgesia, sedation, vasodilation, and relief of air hunger; may be administered by IV push or continuous infusion.
- fentanyl (Sublimaze)—narcotic; 100 times more potent than morphine; faster onset of action than morphine and shorter duration of action; analgesic of choice for patients with renal dysfunction, morphine allergy, or ongoing hemodynamic instability; may be administered IV push or by continuous infusion.

7. General principles for administration of pain or sedative medications:

- For acute pain, analgesics should be administered intravenously for immediate onset of action to prevent the imprinting of the painful experience on the nervous system.
- Subsequent doses may be given intravenously or orally on a regular schedule around the clock.
- Intravenous infusions of analgesics start to act immediately; however, they will not provide significant analgesia until the infusion reaches “steady state.”
- The patient might receive additional boluses of pain medication and sedation in anticipation of painful procedures.
- Elderly patients and patients with renal insufficiency usually need decreased

doses.

- Post-op and post-traumatic pain should decrease over time.
- Daily interruption of continuous infusions of analgesics and sedatives results in a reduction in ventilator days and length of stay in the ICU.

8. Management of delirium:

Treatment of delirium should include use of medications as well as environmental and supportive strategies. Medications may include:

- haloperidol (Haldol)—recommended IV push by SCCM guidelines for treatment of delirium.
- dexmedetomidine—may result in less incidence of delirium; associated with improved patient outcomes, lower cost, and clearing of delirium.

Environmental and supportive strategies include allowing a family member at the bedside to assist with continual reorientation of the patient and having the nursing staff continually reorient the patient with each awakening.

PowerPoint Lecture Slides

1. Management of sedation

- IV propofol (Diprivan)
- IV lorazepam (Ativan)
- Alternative and complementary strategies

2. Management of pain

- IV morphine
 - IV fentanyl (Sublimaze)
3. General principles for administration of pain or sedative medications
- For acute pain, administer analgesics intravenously for immediate onset of action.
 - Subsequent doses may be given IV or orally on a regular schedule around the clock.
 - IV infusions of analgesics start to act immediately.
 - The patient might receive additional boluses of pain medication and sedation in anticipation of painful procedures.
 - Elderly patients and patients with renal insufficiency need decreased doses.
 - Post-op and post-traumatic pain should decrease over time.
 - Daily interruption of analgesic and sedative infusions reduces number of ventilator days and length of stay in the ICU.

4. Management of delirium

Treatment of delirium should include use of medications as well as environmental and supportive strategies. Medications may include:

- IV haloperidol (Haldol)
- IV dexmedetomidine

Suggested Strategies for Classroom Learning

Discuss nursing challenges related to providing care for a patient with dementia.

Learning Outcome 6

Compare and contrast the use of enteral and parenteral nutrition in the critically ill patient.

Concepts for Lecture

1. Although severity of illness is the major factor in determining outcomes of critical illness, the patient's nutritional status and adequacy of nutritional supplementation also contribute (Higgins, Daly, Lipson, & Guo, 2006). The benefits of adequate nutrition in the critically ill patient include:
 - Improved wound healing
 - Decreased catabolic response to injury
 - Improved gastrointestinal function
 - Reduction in complications, length of hospital stay, and cost of stay
2. Enteral nutrition is the delivery of nourishment by feeding tube into the gastrointestinal (GI) tract. Enteral feeding is the preferred route for nutritional supplementation because it is associated with significantly lower rates of infection than parenteral nutrition. Enteral nutrition prevents bacterial translocation from the GI tract, which decreases infection rates.
3. Most common problems associated with enteral nutrition:
 - high gastric residual volumes
 - bacterial colonization of the stomach

- increased risk of aspiration pneumonia
 - unnecessary interruption of feeding
4. Parenteral nutrition involves infusion of nutrients through an IV catheter into a vein. It is used when nutritional supplementation is indicated and enteral feedings cannot be initiated.
 5. Major risks associated with parenteral nutrition include:
 - gut mucosal atrophy
 - overfeeding
 - hyperglycemia
 - increased risk of infectious complications
 - increased mortality
 6. Evaluation of effectiveness of nutritional therapy includes monitoring:
 - daily weight
 - albumin or prealbumin
 - hemoglobin and hematocrit
 - electrolytes, including potassium
 - magnesium
 - phosphorus
 - assessment of wounds for granulation tissue

PowerPoint Lecture Slides

1. Enteral nutrition

- Delivery of nourishment by feeding tube into the gastrointestinal (GI) tract

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- Preferred route for nutritional supplementation
 - Prevents bacterial translocation from the GI tract
 - Decreases infection rates
2. Most common problems associated with enteral nutrition:
- high gastric residual volumes
 - bacterial colonization of the stomach
 - increased risk of aspiration pneumonia
 - unnecessary interruption of feeding
3. Parenteral nutrition
- Involves infusion of nutrients through an IV catheter into a large central vein.
 - Used when nutritional supplementation is indicated and enteral feedings cannot be initiated.
4. Major risks associated with parenteral nutrition include:
- gut mucosal atrophy
 - overfeeding
 - hyperglycemia
 - increased risk of infectious complications
 - increased mortality
5. Evaluation of effectiveness of nutritional therapy includes monitoring:
- daily weight
 - albumin or prealbumin
 - hemoglobin and hematocrit
 - electrolytes including potassium

- magnesium
- phosphorus
- assessment of wounds for granulation tissue

Suggested Strategies for Classroom Learning

Discuss major advantages associated with the use of enteral nutrition for a critically ill patient who requires nutritional supplementation.

Describe desirable assessment parameters for the patient who is receiving parenteral nutrition.

Learning Outcome 7

Discuss ways to identify and meet the needs of families of critically ill patients.

Concepts for Lecture

1. Families of critically ill patients often experience stress, anxiety, and depression.

Families' stress scores are high when the patient is admitted to the ICU but tend to decrease over time. Needs of families of patients in critical care include:

- Need to feel that there is hope
- Need to feel that hospital personnel care about the patient
- Need to have a waiting room near the patient
- Need to be called at home about changes in the patient's condition
- Need to know the prognosis
- Need to have questions answered honestly

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- Need to know specific facts about the patient’s prognosis
- Need to receive information about the patient at least once a day
- Need to have explanations given in understandable terms
- Need to be allowed to see the patient frequently

2. Family needs fall into one of five domains:

- support
- comfort
- proximity
- information
- assurance

3. Meeting the needs of families of critical care patients

Family Need	Nurse Response to Family Needs
Need for information	<p>The nurse must carefully assess how much information family members want and can understand. The nurse should then explain what is happening to the patient every day.</p> <p>Regular family conferences</p> <p>Written instructional guides</p> <p>Consistency in the nurse providing care when possible</p>
Need to be close to the patient	Open visitation when possible
Need for support and assurance	Nurse demonstrates competence and caring in

	dealing with the patient and family
Need for information	Provide information

PowerPoint Lecture Slides

1. Needs of families of critically ill patients

- Need to feel that there is hope
- Need to feel that hospital personnel care about the patient
- Need to have a waiting room near the patient
- Need to be called at home about changes in the patient's condition
- Need to know the prognosis
- Need to have questions answered honestly
- Need to know specific facts about the patient's prognosis
- Need to receive information about the patient at least once a day
- Need to have explanations given in understandable terms
- Need to be allowed to see the patient frequently

2. Meeting the needs of family members

- Provide information
- Discuss patient goals
- Give written instructional guidelines to provide information about critical care
- Provide a way to contact the nurse
- Arrange for consistency in the nurse

- Have open visiting hours
- Give access to telephones, bathrooms, and food
- Provide good communication
- Provide relaxed waiting area near the patient

Suggested Strategies for Classroom Learning

Ask the class to reflect on at least three ways that the critical care nurse might be responsive to the typical needs of the family of an ICU patient.