

**Curriculum Competencies:**

**Oral and Maxillofacial Surgery  
Anesthesia and Pain & Anxiety Control  
Management of Medical Emergencies**

**AAOMS Curriculum Guidelines Task Force**

**February 1, 2002**

## Report of the AAOMS Curriculum Guidelines Task Force

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## **Introduction**

Guidelines for predoctoral curriculum objectives and content in anesthesia were revised in 1999 (CODA, October, 1999) and curriculum guidelines for pain and anxiety control were updated in 2000 (ADA House of Delegates; October, 2000). However, guidelines for predoctoral curriculum in oral and maxillofacial surgery have not been updated since 1993 (J Dental Education; volume 57, number 4, 1993) and guidelines for management of medical emergencies were last published in 1981 (J Dental Education; volume 45, number 6, 1981). Accordingly, the Oral and Maxillofacial Curriculum Guidelines Task Force was charged to comprehensively review each of these areas and develop new curriculum guidelines for the predoctoral student in: (1) oral and maxillofacial surgery, (2) anesthesia, pain and anxiety control and (3) management of medical emergencies. The updated guidelines were developed in a competency-based format to correspond to the accreditation requirements of the Commission on Dental Accreditation (CODA). These competency statements are designed to assist dental school faculty in evaluating the appropriateness of existing curricula in these three areas of predoctoral education. Hopefully, these competencies will also provide faculty with a guide for designing learning experiences and competency assessment techniques for dental students.

### **What is competency-based dental education?**

Competence consists of knowledge, experience, problem solving ability, professional behavior, ethical values, and technical and procedural skills. During successful performance, all components of competence blend together seamlessly into an integrated whole during the delivery of quality patient care. In competency-based dental education, *what* students learn (e.g., curriculum content) is based on clearly articulated competencies which comprise the biomedical knowledge, psychomotor skills and ethical values that are essential for independent and unsupervised performance as an entry-level general dental practitioner. The competencies presented in this document were developed by the Oral and Maxillofacial Curriculum Guidelines Task Force to describe the knowledge, skills and values that new dental school graduates need in oral and maxillofacial surgery, anesthesia, pain and anxiety control and management of medical emergencies to begin their professional career in dentistry. It is

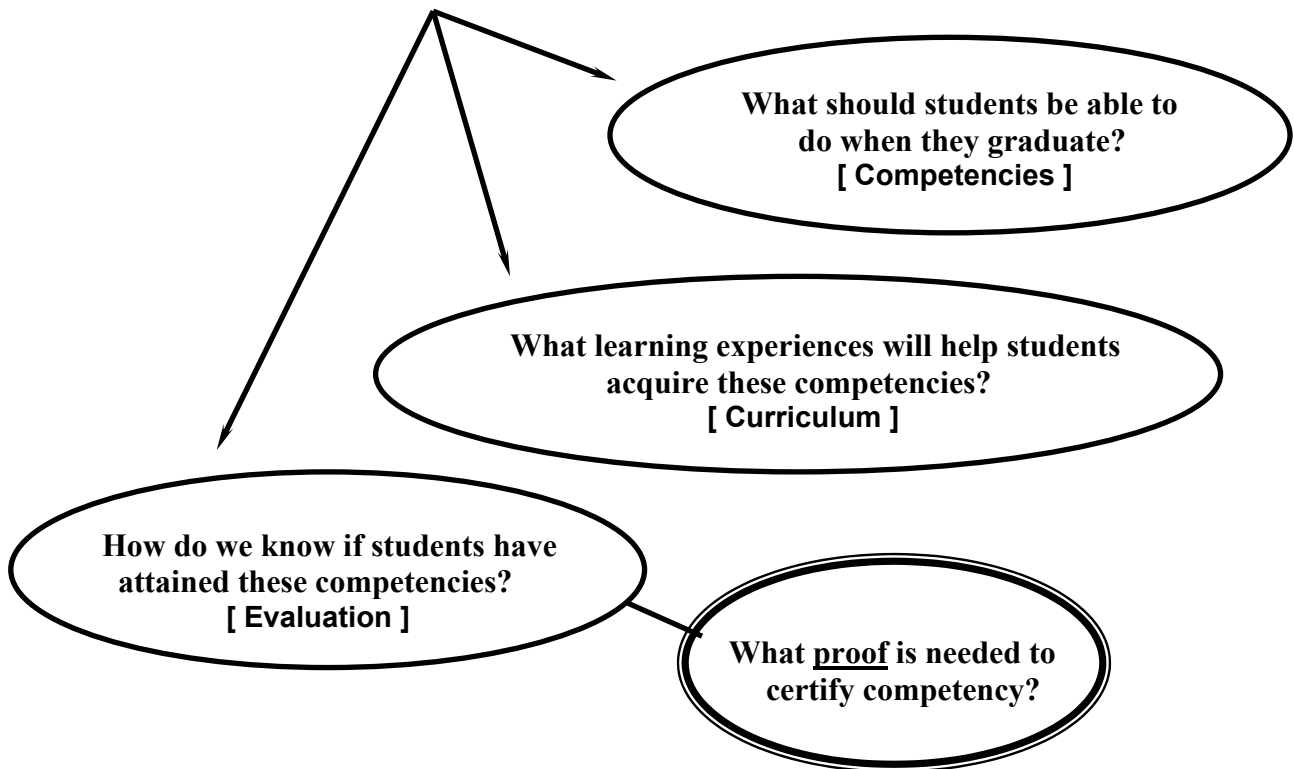
recognized that these competencies represent only a starting point for a dentist's life-long professional journey – a journey which will include on-going assessment, enhancement and refinement of the patient care skills needed to serve the evolving oral health needs of the public.

Dental school faculty answer three questions to develop a competency-based curriculum:

- 1) what knowledge, skills and professional/ethical values should the student possess at the time of graduation?
- 2) What learning experiences will enable students to acquire these competencies?
- and, 3) How do faculty know if students have attained these competencies - what proof, or evidence, is needed to establish that a student has attained competency?

### Planning a Competency-Based Curriculum: Three Questions to Answer

#### CBE Curriculum Questions



Hendricson WD, Kleffner JH. Curricular and instructional implications of competency-based dental education. J Dent Educ. 1998; 62: 183-196.

Smith SR, Dollase R. AMEE guide no. 14: outcome-based education. Part 2: planning, implementing and evaluating a competency-based curriculum. Med Teacher. 1999; 21:15-22.

## **Format for Competency Statements**

The following format was used to develop and present the competencies. Components of this format, described below, include:

- **Competencies**
- **Educational outcomes**
- **Knowledge and skills** that students need to achieve each competency

**Competencies.** A competency is a broadly stated general description of an essential patient care skill or professional role that entry-level general dentists must be able to perform unassisted and unsupervised. Competencies were developed in three broad areas of dental practice:

- (1) oral and maxillofacial surgery**
- (2) anesthesia, pain and anxiety control, and**
- (3) management of medical emergencies.**

The CODA accreditation guidelines require dental schools to identify competencies in each of these three areas and to identify methods used to assess student competency.

**Educational outcomes.** For each competency, these statements identify the biomedical knowledge, technical/procedural skills and patient management skills that students must learn in order to achieve competency.

**Knowledge.** For each educational outcome, the core biomedical knowledge that the student must comprehend in order to perform the competency is identified. These items represent the essential foundation knowledge for competent performance.

**Skills.** For each educational outcome, the procedural skills (i.e., surgical techniques) and patient management skills that students must perform are identified.

## **Foundation knowledge, skills and values that apply universally to all competencies**

Five categories of essential skills, knowledge and values were identified that universally apply to all areas of oral and maxillofacial surgery: (1) professional behavior and ethical values,

(2) interpersonal and communication skills, (3) medical legal issues, (4) patient evaluation, diagnosis, treatment planning and outcome assessment, and (5) basic science knowledge. Rather than repeat these universal foundations of professional practice numerous times within this document, they are described once in the “Global Foundation Competencies” section of this report. The pre-doctoral educational program must ensure that dental school graduates are competent in these foundations of professional practice.

## **Background Information**

### **Level of detail - knowledge and skills**

The biomedical knowledge, procedural techniques and patient management skills needed to perform each of the 17 educational outcomes are specified on pages 10 – 27. The inventory of knowledge and skills are presented at a general level of detail, focusing on key items, to help faculty identify topics, issues and skills that should be emphasized in the oral and maxillofacial surgery curriculum, but without being overly prescriptive. The inventory of knowledge and skills for each educational outcome is intended to serve as a baseline that faculty at different schools can adapt based on local faculty expertise, patient population, school and departmental philosophy and priorities, and clinical resources.

### **Bullet format for knowledge foundations**

To avoid repeating the same verbs such as “describe,” “explain” and “comprehend” over and over again for each of the “need to know” topics associated with the competencies, or using verbs such as “understand” and “know” that are vague and subject to multiple interpretations, key knowledge topics are indicated in a bullet format.

## **DEFINITIONS**

### **Definition of the “dental school graduate”**

These competencies were developed for the entry-level (i.e., recent graduate) general dental practitioner.

### **Definition of the word “manage”**

The word “manage” is used when the dentist may provide certain aspects of the patient’s care,

monitor or coordinate care provided by others, or refer the patient to another health care provider for specialized care.

**Definition of the words "perform" or "provide."**

The words “perform,” or “provide” are used when the dentist will actually do certain procedures to provide patient care.

**Definition of "complicated extraction."**

The removal of an erupted tooth that includes elevation of a flap, removal of bone, and/or sectioning of the tooth.

**Use of the word “appropriate”**

The word “appropriate” is used sparingly in these competency statements to eliminate repetition. It is assumed that all knowledge, skills and values described as necessary for accomplishment of each competency will be used in an appropriate manner and in appropriate circumstances. The word “appropriate” is used a few times in the document when assessment of competency depends on making the correct choice among options.

**Patient populations**

Unless otherwise specified, the population for all competencies includes child, adolescent, adult and geriatric patients and individuals with special physical and cognitive needs.

**Global Foundation Competencies**

The following essential knowledge, skills and values universally apply to all areas of oral and maxillofacial surgery and to the practice of dentistry in general. There are five foundations for dental practice in the area of oral and maxillofacial surgery: (1) professional behavior and ethical values, (2) interpersonal and communication skills, (3) medical legal issues, (4) patient evaluation, diagnosis, treatment planning and outcome assessment, and (5) basic science knowledge. Rather than repeat these universal and essential components of professional practice numerous times within this document, they are described once in this section. It is recognized that dental schools have developed their own competency statements that identify what the entry-level general dentist should be able to do. These school-level competencies

represent the desired outcomes of the overall predoctoral program. The foundation competencies described below will almost assuredly be represented in the school-level competencies, but are presented here to indicate the foundations that provide the basis for the general dentist's competence in the area of oral and maxillofacial surgery.

### **Professional Behavior and Ethical Values**

The dental school graduate will demonstrate professional behavior and personal accountability by providing health care in an altruistic manner without consideration of self-interest, and by displaying sensitivity to each patient's circumstances and needs.

### **Interpersonal and Communication Skills**

The dental school graduate will use interpersonal and communications skills that provide for an effective exchange of information and teamwork with patients, the families of patients and other health care professionals.

### **Medical and Legal Issues**

The dental school graduate will ensure that treatment is preceded by the patient's or legal guardian's informed consent. Graduates will comply with the dental and medical practice acts of their state of residence, and practice dentistry in a manner consistent with professional standards of care.

### **Patient Evaluation, Diagnosis, Treatment Planning and Outcome Assessment**

The dental school graduate will conduct a thorough history and physical examination, establish a diagnosis, develop a treatment plan and monitor the outcomes of treatment.

### **Basic Science Knowledge**

The dental school graduate will demonstrate knowledge of the basic sciences (i.e., anatomy, physiology, microbiology) that are necessary for comprehension of the processes that determine normal and abnormal growth and development, and understanding of the mechanisms involved in disease pathophysiology.



## **Competencies and Educational Outcomes for Predoctoral Dental Education**

**Competency:**           **Manage patients requiring oral and maxillofacial surgery and perform uncomplicated oral surgery procedures.**

### ***Educational Outcomes:***

1. Apply basic principles of surgery.
2. Perform uncomplicated extractions.
3. Manage patients requiring complicated extractions.
4. Manage patients with unerupted and/or impacted teeth.
5. Manage patients requiring implant reconstruction.
6. Manage patients requiring preprosthetic surgery.
7. Manage patients requiring reconstructive surgery.
8. Manage patients with oral and maxillofacial pathology.
9. Manage patients with oral and maxillofacial infections.
10. Manage patients with oral and maxillofacial trauma.
11. Manage patients with facial pain and temporomandibular disorders
12. Manage patients with craniofacial deformities to include syndromes, clefting and dentofacial deformities.
13. Manage patients interested in cosmetic surgery.

**Competency:**           **Manage pain and anxiety and provide local anesthesia.**

### ***Educational Outcomes:***

14. Provide local anesthesia for dental procedures.
15. Manage patients' fear and anxiety.
16. Manage acute oral and maxillofacial pain.

**Competency:**           **Manage medical emergencies.**

### ***Educational Outcome:***

17. Recognize and manage medical emergencies that may occur in the dental office and perform health care provider-level basic life support.

**Competency:       Manage patients requiring oral and maxillofacial surgery and perform uncomplicated oral surgery procedures.**

***Educational Outcome: Apply basic principles of surgery. \****

**Knowledge:**

1. Laboratory, imaging and adjunctive information required to develop a diagnosis and treatment plan.
2. Limits of surgical expertise and when specialty referral is indicated.
3. Risks and complications of surgical procedures.
4. Indications for hospital-based care.
5. Infection control.
6. Principles of incision and flap design.
7. Principles of suturing.
8. Hemostasis.
9. Pre and post surgical care.
10. Wound healing.
11. Nutrition.

**Skills:**

1. Interpret medical history, physical examination findings, vital signs, imaging results and laboratory data.
2. Develop a diagnosis and treatment plan to include specialty referral when indicated.
3. Apply infection control techniques.
4. Select and use equipment, instruments and materials as indicated for the procedure.
5. Design and reflect mucoperiosteal flaps.
6. Suture wounds.
7. Provide post-operative instructions including pain management and nutrition.
8. Evaluate surgical outcomes and manage complications.

\* The knowledge and skills for educational outcome # 1 are specified in detail because these items provide the foundation for subsequent outcomes.

***Educational Outcome: Perform uncomplicated extractions.***

**Knowledge:**

1. Clinical and radiographic indications of surgical complexity.
2. Basic surgical principles.
3. Armamentarium.
4. Biomechanical principles as they apply in general exodontia (chair position, instruments as they are used for specific teeth).

**Skills:**

1. Evaluate the need for extraction.
2. Evaluate the patient's medical status and whether consultation and or specialty referral is indicated.
3. Determine the difficulty of the extraction and whether specialty referral is indicated.
4. Position the patient and apply infection control techniques.
5. Select and use equipment, instruments and materials as indicated for the extraction procedure.
6. Suture wounds, if needed.
7. Provide post-operative instructions including pain management and nutrition.
8. Evaluate the surgical outcomes and manage complications.

**Educational Outcome: Manage patients requiring complicated extractions \***

**Knowledge:**

1. Clinical and radiographic indications of uncomplicated and complicated extractions.
2. Basic surgical principles as applied to complicated extractions.
3. Armamentarium for complicated extractions.
4. Biomechanical principles as they apply in general exodontia (chair position, instruments as they are used for specific teeth).

**Skills:**

1. Evaluate the need for extraction and whether specialist referral is indicated
2. Evaluate the patient's medical status and whether consultation and/or specialty referral is indicated.
3. Evaluate the surgical outcomes and manage complications.

\* Complicated extraction = The removal of an erupted tooth that includes elevation of a flap, removal of bone, and/or sectioning of the tooth.

**Educational Outcome: Manage patients with unerupted and/or impacted teeth.**

**Knowledge:**

1. Diagnosis, treatment planning and coordination of care for patients with unerupted and/or impacted teeth.
2. Indications and contra-indications for management of unerupted and impacted teeth.
3. Basic surgical principles as applied to the management of unerupted and impacted teeth.

**Skills**

1. Evaluate the need for treatment.
2. Determine if specialty consultation and/or referral are indicated.

**Educational Outcome: Manage patients requiring implant reconstruction.**

**Knowledge:**

1. Diagnosis, treatment planning and coordination of care for patients needing implant reconstruction.
2. Indications and contra-indications for implant reconstruction.
3. Principles of tissue engineering, biomaterials and biomechanics as they apply to implant therapy.
4. Basic surgical principles as applied to implant reconstruction.

**Skills**

1. Evaluate the use of implants as a treatment option.
2. Determine if specialty consultation and/or referral are indicated.

**Educational Outcome: Manage patients requiring preprosthetic surgery.**

**Knowledge:**

1. Diagnosis, treatment planning and coordination of care for patients requiring preprosthetic surgery.
2. Indications and contraindications for preprosthetic surgery.
3. Basic surgical principles as applied to preprosthetic surgery including alveoplasty.

**Skills:**

1. Evaluate the need for preprosthetic surgery
2. Determine if specialty consultation and/or referral are indicated.

**Educational Outcome: Manage patients requiring reconstructive surgery.**

**Knowledge:**

1. Diagnosis, treatment planning and coordination of care for patients requiring reconstructive surgery.
2. Indications and contraindications for reconstructive surgery.
3. Basic surgical principles as applied to reconstructive surgery.

**Skills:**

1. Evaluate the need for reconstructive surgery
2. Determine if specialty consultation and/or referral are indicated.



**Educational Outcome: Manage patients with oral and maxillofacial pathology.**

**Knowledge:**

1. Clinical, imaging and microscopic findings associated with oral and maxillofacial pathology including mucosal lesions, oral cancer, benign and malignant jaw tumors and oral manifestations of systemic diseases.
2. Diagnostic and therapeutic options for the management of patients with oral and maxillofacial pathology including biopsy techniques, surgery, chemotherapy, radiation).
3. Prognosis for various pathologies of the orofacial complex.
4. Dental management of patients undergoing radiation and/or chemotherapy.
5. Prevention of oral pathology.
6. Coordination of long-term follow-up care.

**Skills:**

1. Develop a differential diagnosis for oral and maxillofacial pathology.
2. Discuss the differential diagnosis and treatment options with the patient.
3. Determine if specialty consultation and/or referral are indicated.
4. Interpret the biopsy report and manage the patient accordingly.

**Educational Outcome: Manage patients with oral and maxillofacial infections.**

**Knowledge:**

1. Diagnosis, and evaluation of the severity of oral and maxillofacial infections.
2. Pharmacotherapeutic management of oral and maxillofacial infections.
3. Basic surgical principles as they apply to the management of oral and maxillofacial infections.

**Skills:**

1. Recognize signs and symptoms of oral and maxillofacial infections.
2. Evaluate the severity of the oral and maxillofacial infection.
3. Provide therapy if the management of the patient's oral and maxillofacial infection is within the general practitioner's level of expertise, or refer the patient to a specialist for consultation.
4. Provide post-therapeutic care and determine the need for additional follow-up therapy and/or referral to a specialist.

***Educational Outcome:* Manage patients with oral and maxillofacial trauma.**

**Knowledge:**

1. Patient assessment techniques including recognition of possible life-threatening injuries (closed head trauma, compromised airway, hemorrhage, and cervical spine injury)
2. Clinical and imaging assessment techniques for patients with oral and maxillofacial trauma.
3. Principles of treating alveolus fractures with luxated teeth.
4. Surgical principles as they apply to management of oral and maxillofacial trauma.

**Skills:**

1. Evaluate the extent of the oral and maxillofacial trauma.
2. If the severity of the trauma is beyond the level of expertise of the general dental practitioner, obtain consultation and/or refer the patient to a specialist.
3. Provide follow-up care as indicated.
4. Evaluate the results of treatment and determine if additional therapy and/or specialty referral is indicated.

***Educational Outcome:* Manage patients with chronic oral and maxillofacial facial pain and temporomandibular disorders.**

**Knowledge:**

1. Pathophysiology of chronic facial pain and temporomandibular disorders.
2. Diagnosis of chronic oral facial pain and temporomandibular disorders.
3. Clinical and imaging assessment techniques for patients with chronic facial pain and temporomandibular disorders.
4. Surgical principles as they apply to the management of patients with chronic facial pain and temporomandibular disorders.
5. Limitations and complications of therapeutic options for chronic facial pain and temporomandibular disorders.

**Skills:**

1. Evaluate the patient with chronic facial pain and/or temporomandibular disorders and develop a differential diagnosis.
2. Manage the patient's chronic facial pain and/or temporomandibular disorder if the problem is within the general dental practitioner's level of expertise.
3. Determine if specialty referral is indicated and make a referral if necessary.
4. Evaluate the results of treatment and determine if additional therapy and/or specialty referral is indicated.

***Educational Outcome: Manage patients with craniofacial and dentofacial deformities***

**Knowledge:**

1. Genetic basis, etiology, incidence, pathogenesis and clinical presentation of craniofacial and dentofacial deformities including craniosynostosis, brachial arch disorders, oral/facial clefting, clefting in syndromes and dentofacial developmental deformities.
2. Multidisciplinary management of craniofacial and dentofacial deformities.
3. Clinical and imaging assessment techniques for patients with craniofacial deformities.
4. Surgical principles as they apply to management of patients with craniofacial deformities.

**Skills:**

1. Recognize variations from normal head and neck anatomy.
2. Assess the patient's deformity and make appropriate consultations and specialty referral when indicated.
3. Coordinate long-term follow-up care with dental and medical specialists.

**Educational Outcome:** Manage patients interested in cosmetic oral and maxillofacial surgery.

**Knowledge:**

1. Role of cosmetic surgery in enhancing a patient's self-esteem.
2. Commonly used surgical procedures as they apply to cosmetic oral and maxillofacial surgery.

**Skills:**

1. Recognize the patient's cosmetic concerns.
2. Refer the patient to an appropriate specialist.

**Competency:       Manage pain and anxiety and provide local anesthesia.**

***Educational Outcome:*   Provide local anesthesia for dental procedures.**

**Knowledge:**

1. Pharmacotherapeutics of local anesthetic agents and vasoconstrictors.
2. Oral and maxillofacial neuroanatomy.
3. Clinical techniques for obtaining local anesthesia.
4. Causes of local anesthesia failures.
5. Local anesthesia armamentarium.
6. Limitations, contraindications and complications of local anesthesia administration.

**Skills:**

1. Select the appropriate local anesthetic agent and vasoconstrictor.
2. Select the appropriate technique for delivering local anesthesia.
3. Perform local anesthesia injections.
4. Assess effectiveness of local anesthesia.
5. Manage local anesthesia failures.

***Educational Outcome: Manage patient fear and anxiety.***

**Knowledge:**

1. Signs and symptoms of patient anxiety.
2. Pharmacotherapeutics of sedative, anxiolytic and analgesic agents in pediatric, adult, geriatric and special needs patients.
3. Indications, contra-indications and limitations for management of patients' fear and anxiety.
4. Techniques for delivering sedative, anxiolytic and analgesic agents: enteral, parenteral and inhalation.
5. Complications and limitations of sedative, anxiolytic and analgesic agents and management of complications.
6. Non-pharmacological techniques for anxiety control.

**Skills:**

1. Evaluate patient anxiety and determine the need for enteral, parenteral or inhalation sedation
2. Administer, monitor, and document inhalation sedation with nitrous oxide and oxygen.
3. Recognize the limitations and failures of sedative, anxiolytic and analgesic agents and techniques and refer the patient for anxiety control when indicated.



***Educational Outcome:* Manage acute oral and maxillofacial pain.**

**Knowledge:**

1. Differential diagnosis of acute oral and maxillofacial pain.
2. Pharmacotherapeutics of drugs used to manage acute oral and maxillofacial pain.
3. Non-pharmacological techniques for pain control.
4. Indications, contraindications and limitations of methods used to manage acute oral and maxillofacial pain.
5. Complications of methods used to treat acute oral and maxillofacial pain, and management of these complications.

**Skills:**

1. Manage acute oral and maxillofacial pain using pharmacological agents.
2. Recognize complications and failures of pharmacological management of acute oral and maxillofacial pain.
3. Write prescriptions for drugs used to manage acute oral and maxillofacial pain.

**Competency: Manage medical emergencies.**

***Educational Outcome:* Recognize and manage medical emergencies that may occur in the dental office and perform health care provider-level basic life support.**

**Knowledge:**

1. Evaluation of patient's medical history for risk factors.
2. Physical examination techniques and assessment of vital signs.
3. Pharmacologic and non-pharmacologic means of preventing medical emergencies.
4. Pathophysiology and diagnosis of medical emergencies.
5. Pharmacology of drugs used to manage medical emergencies.
6. Equipment and procedures for medical emergency preparedness.
7. Health care provider-level basic life support measures.

**Skills:**

1. Recognize patients at risk for medical emergencies and modify treatment plans accordingly.
2. Recognize and diagnose medical emergencies.
3. Perform initial stabilizing treatment for medical emergencies.
4. Provide health care provider-level basic life support as defined by the American Heart Association.
5. Transfer the patient to a higher level of care when indicated.