

Date: August 25, 2002

To: EMS Instructors

From: EMS Testing Committee

Re: Recommendations and Key Concepts for Cardiology Instruction

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Dear Sir or Madam:

The EMS Testing Committee continues to gather information about current EMS testing practices in Ohio. As part of this process, the Testing Committee discovered that the cardiology portion of the National Registry Paramedic Examination has the highest failure rate compared to any other section of the examination. This is a national trend as well as in Ohio. In 2001, registrants from Ohio failed the cardiology section by a 5:2 margin.

Cardiovascular diseases continue to be the leading cause of death in the United States and accounts for a large volume of EMS runs annually. The cardiology section of the DOT paramedic curriculum is one of the more difficult and challenging to master; nevertheless its high importance to the student, field provider, and the public cannot be overstated. Thus, it is imperative to assist programs throughout the State to enhance their instructional capabilities.

The EMS Testing Committee recommended that an Ad-Hoc Committee be formed to review and make recommendations to enhance the learning and retention of cardiology material. The primary benefit of this project will hopefully be a better entry-level paramedic into the EMS system. A secondary benefit is, of course, a better passing rate on the cardiovascular section of the National Registry exam. The Ad-Hoc Committee met on August 19-20, 2002 in Columbus to discuss the cardiology section of the DOT curriculum and its instruction statewide. The Committee has developed the attached series of recommendations and key concepts.

After reviewing the enclosed material, should you have any questions, please contact the EMS Testing Committee Chair, Mark Marchetta at 330-379-9582 or via email at [marchetm@summa-health.org](mailto:marchetm@summa-health.org)

Respectfully,

Mark Marchetta, BS, RN, NREMT-P  
Chair, EMS Testing Committee  
Chair, EMS Education Committee

## **Recommendations:**

### **1. Supplemental texts must be incorporated**

- ✍ Over and above main text (i.e. Mosby / Brady...)
  - i. A&P (A text solely devoted to anatomy and physiology of the human body)
  - ii. Arrhythmia (A text that contains practice rhythm strips)
  - iii. Pharmacology text (A text that lists the more commonly used cardiovascular drugs and other medications.)
  - iv. ACLS material or equivalent

#### Rationale:

Textbooks may vary in their breadth and depth of coverage of cardiology material, therefore supplemental resources should be utilized.

### **2. Testing material**

- ✍ The program faculty, staff, and/or presenter should generate the majority of testing materials.

#### Rationale:

Commercially prepared test bank questions only reflect the information contained in that individual text and not the overall cardiovascular material. Additionally commercially prepared test banks may be difficult to secure may be unreliable and may not reflect the question format seen on state certification exams.

### **3. Introduction to pharmacology**

- ✍ Introduction to general pharmacology should precede the cardiology/ACLS sections of the program.
- ✍ An introduction to cardiac specific pharmacology should also precede the cardiology/ACLS sections of the program.

#### Rationale:

A working knowledge of the most commonly used pharmacologic agents is essential for managing acute coronary syndromes. Attempting to teach both cardiology and pharmacology concurrently can overwhelm the student.

#### **4. Cardiology core content**

- ✍ Core content of the cardiology section should be taught by the midpoint of the program.

Rationale:

Provides opportunity to utilize knowledge in the lab and clinical area over a large portion of the program.

- ? **This section should be presented as early in the program as possible.**

#### **5. American Heart Association ACLS provider course**

- ✍ Successful completion of an American Heart Association ACLS provider course should occur prior to graduation.

Rationale:

AHA is currently the national standard for emergency cardiac care and students must know and demonstrate competency.

#### **6. Demonstration of knowledge and skills**

- ✍ Augment learning through practice encounters and demonstrate knowledge and skill retention through practical and skill exams prior to clinical experience.

Rationale:

Clinical experience is used to enhance the knowledge and skills taught. Clinical experience is not meant as a substitute for attaining didactic, psychomotor and affective skills competency in the classroom and practical lab setting.

#### **7. Remediation**

- ✍ Remediation should be provided when needed to assure student competency.

Rationale:

To ensure students meet minimum standards despite varying strengths, weaknesses, and learning styles.

## 8. Reinforcement and reevaluation

- ✍ Reinforcement and reevaluation of cardiology **must** occur on a regular basis throughout the course.

### Rationale:

The cardiology section is one of the more complex and extensive components of the program. Successful assimilation of the concepts contained therein serves as the foundation for the study of multiple medical disorders. Cardiology topics should be integrated with other areas of study throughout the course. (i.e. stroke, diabetes, pulmonary, trauma etc)

## 9. Patient encounters

- ✍ The DOT has recommended a minimum of thirty (30) cardiac patient encounters. In areas where the patient population is limited, utilization of case-based (problem-based) scenarios should be incorporated.

### Rationale:

Although live patient contacts offer far better learning opportunities, some patient scenarios occur infrequently and must be substituted using case-based (problem-based) scenarios. (i.e. cardiogenic shock, AAA, transcutaneous pacing, cardioversion and others)

## 10. Contemporary knowledge

- ✍ Maintain contemporary knowledge of current terminology, pathophysiology, and management of acute coronary syndromes and other cardiac events.

### Rationale:

As with any medical science, treatment modalities, pharmacological interventions and terminology continually evolve with the advent of new research findings. (i.e. thrombolytics vs. fibrinolytic agents, amiodarone vs lidocaine, monophasic vs biphasic defibrillation, ACS vs AMI)

## 11. Program Director's responsibility

- i. To ensure their program covers the proper cardiology material, regardless of who teaches the cardiology section of the program.

### Rationale:

The program director is responsible for assuring the competence and adherence of the presenter to relevant material.

- ii. Although the DOT cardiology objectives are comprehensive the program director will need to further develop the declarative outline for clarification. **“The declarative material is not all-inclusive. The declarative sections of the curriculum lack much of the specific information that must be added by the instructor. ... It is of utmost importance to note that the declarative material is not designed to be used as a lesson plan, but rather it should be used by instructors to help develop their own lesson plans.”** (ref. USDOT /NHTSA 1999 pg 29 Intro.)

### Rationale:

The 207 cardiology objectives are comprehensive but the 28 page declarative outline does not fully support these objectives.

## 12. Student/Instructor ratio

- ✍ During complex cognitive and psychomotor activities the committee recommends a student to instructor ratio of 4:1.

### Rationale:

Affords the instructor better assessment and evaluation of individual student performance during complex skill sessions.

## **KEY CONCEPTS:**

1. Remember the material is college level reading material.
2. Instructors are encouraged to read additional material on the sub-section being taught.
3. Attempt to correlate didactic information with clinical and practical sessions.
4. As the material contained in Cardiology is complex yet critical, the instructor must enhance the student's educational experience by utilizing various teaching techniques and materials, including but not limited to 3-D models, patient simulators, and small group didactic instruction. Additionally, a student/instructor ratio of ? 4:1 provides a more optimal learning environment for each student.
5. Dosages listed in pharmacology books are often author specific. Regardless of the pharmacology book chosen, the dosages taught must follow the American Heart Association standard.
6. Instructors should generate their own tests to adequately assess students' knowledge of the content they have covered rather than solely relying upon commercially produced test banks.
7. **The declarative material is not all inclusive. The declarative section of the curriculum lacks much of the specific information that must be added by the instructor.** The declarative information represents the bare minimum that should be covered, but the instructor must elaborate on the material listed. Every attempt has been made in development of the declarative material to avoid specific treatment protocols, drug dosages or other material that changes over time and has regional variations. It is the responsibility of the instructors to provide this information.

Specifically, the declarative material is used to help instructors develop lesson plans and instructional strategies. It is also designed to assist examination and publishers in developing appropriate evaluation materials and instructional support materials. **It is of utmost importance to note that the declarative material is not designed to be used as a lesson plan, but rather it should be used by instructors to help develop their own lesson plans.** (ref. USDOT /NHTSA 1999 pg 29 Intro.)

**Cardiology Ad-Hoc Committee Members:**

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