

Advanced Emergency Medical Care Assistant Theory Examination

Study Guide and Sample Questions

Version 5.0
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Emergency Health Services Branch
Ministry of Health and Long-Term Care



To all users of this publication:

The information contained in this standard has been carefully compiled and is believed to be accurate at date of publication.

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Document Control

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Overview

The Advanced Emergency Medical Care Assistant (AEMCA) Theory Examination is offered three (3) times per year by the Ontario Ministry of Health and Long-Term Care (MOHLTC). Successful completion of this exam (minimum score 70%) is required to be eligible for employment as a Primary Care Paramedic in Ontario.

The AEMCA Theory Examination is based upon, but not limited to, the MOHLTC Basic Life Support Patient Care Standards (BLS PCS), Advanced Life Support Patient Care Standards (ALS PCS) and the MOHLTC Pre-hospital Care Syllabus. The exam is written on one day, with a three (3) hour morning session and a three (3) hour afternoon session. The AEMCA exam is composed of multiple choice questions which pertain to various scenarios based on actual ambulance calls. Also included in the exam is some multiple choice questions which stand alone and are not related to any specific scenario.

No single text provides the range of information necessary for a comprehensive review of the categories and sub-categories covered in the exam. Training facilities may utilize a wide range of resource materials during the educational process.

Subject Categories

The AEMCA Theory Examination measures knowledge and skills in the following categories and subcategories:

Categories

- Anatomy & Physiology
- Assessment
- Communications
- Legal
- Management
- Pathophysiology

Subcategories

- *Advanced Life Support Patient Care Standards*
- Air Operations
- *Ambulance Act*
- *Ambulance Service Communicable Disease Standards*
- Anaphylaxis
- *Basic Life Support Patient Care Standards*
- Behavioural situations
- Burns
- Cardiovascular system
- Central Nervous system
- *Child & Family Services Act*
- *Coroners Act*
- Defibrillation
- Diabetes
- Do Not Resuscitate
- Documentation
- ECG interpretation
- Endocrine system
- Environmental
- Equipment
- Ethics
- Extrication
- Gastrointestinal system
- Geriatrics
- Health and Safety
- *Health Care Consent Act*
- *Highway Traffic Act*
- History taking
- Infection control
- Infectious Diseases
- Intravenous therapy
- *Mental Health Act*
- Multi-system
- Musculoskeletal system
- Neonatal
- Obstetrics
- Oncology
- *Ontario Ambulance Documentation Standards*
- Other
- *Patient Care and Transportation Standards*

- Pediatrics
- Pharmacology
- Primary Survey
- Radio report
- Renal system
- Reproductive system
- Respiratory system
- Scene
- Secondary Survey
- Shock
- Soft tissue injuries
- Substance Abuse
- Therapeutic communications
- Toxicology
- Trauma
- Triage
- Vehicle Operations
- Verbal report

Question Types

Within each category you may be asked several types of questions corresponding to cognitive levels. Cognition level refers to the degree of complexity of thinking required to answer a question or solve a specific problem. The types of questions, in increasing order of difficulty, are:

1. *Factual* questions measure your ability to recall facts pertaining to a specific category of content.
2. *Application* questions require you to apply your knowledge of concepts to a particular patient situation or content area.
3. *Judgement* questions measure your ability to decide the best course of action or most appropriate approach in a provided situation.
4. *Interpretative* questions require you to determine the inferences of a given situation (e.g. patient assessment findings; presenting manifestation or given condition; legal and/or environmental conditions)
5. *Rationale* questions measure your ability to explain the reason for assessment findings; management decisions; patient clinical presentations and safety and legal precautions.
6. *Prioritization* questions measure your ability to sequence assessment based on what is best to perform or expected according to a given protocol. It also measures your ability to select the most appropriate action or measure when managing a situation.

Scoring Process

The AEMCA Theory Examination is comprised of questions developed by experts in the field of pre-hospital care. The exam is subject to rigorous statistical analysis before scores are reported to candidates. This analysis determines whether each question yielded the expected statistical results. If this analysis suggests that particular questions were ambiguous, required knowledge beyond the scope of the exam or were otherwise inappropriate, then the results of these questions are not used in computing the candidates' score.

Strategies

- All questions on the exam are of equal value; do not waste excessive time pondering an individual question.
- Scores are based upon the number of correctly answered questions; wrong answers do not count against your score. Therefore, to maximize your score, it is better to guess at an answer than not to respond at all.
- Record all your answers on your computer answer sheet. This sheet is the only document that will be scored.
- If you decide to change an answer on your answer sheet, ensure you completely erase the pencil mark you do not wish to be scanned by the computer.
- Do not wait until the last few minutes of the exam to record your answers on your answer sheet; extra time will not be granted for this purpose.
- Check frequently to ensure you are marking your answers in the appropriate row on your answer sheet.
- If you are stuck on a difficult question, eliminate as many answer choices as possible and then select the answer you think is best from the choices remaining.

Sample Exam Questions

The following is an example of the type and format of questions you will see on the AEMCA Theory Examination. Following each question is an explanation of the question type and the correct answer.

You are dispatched priority 4 to a working fire, where there is an injured firefighter on scene.

You arrive at the scene and as you are unloading your equipment a firefighter rushes up to you and tells you that one of his crew had a problem with his tank and ran out of air while he was in the burning house. The firefighter was helped out of the structure and is now sitting on the rear step bumper of the fire truck.

You approach your patient and observe him to be approximately 50 years old, weighing approximately 80 kilograms. He is leaning forward, coughing and gasping for air. You observe that in addition to his dyspnea, he is flushed and diaphoretic. Upon auscultation

breath sounds are clear and equal bilaterally at this time. He tells you that his name is Gord and he is experiencing chest pain. He confirms that he has a previous history of angina.

1. Your priority at this time is to:
 1. Administer O₂ to Gord via a non-rebreather mask at 15 L/min.
 2. Move Gord to your vehicle in order to give him humidified oxygen.
 3. Attempt to insert a nasopharyngeal airway.
 4. Attach Gord to your cardiac monitor.
 5. Question Gord further about his heart condition.
 - A. 1, 3 and 4
 - B. 1, 4 and 5
 - C. 2, 3 and 4
 - D. 2, 3 and 5

This is a prioritization question. Gord is in severe respiratory distress and therefore requires immediate oxygen therapy. Although humidified oxygen is preferable for a smoke inhalation patient, you should not take the time to move Gord to your vehicle without further assessing his condition. Choice 2 is incorrect. Oxygen via a non-rebreather mask is your best choice at this time. Choice 1 is correct. Gord has told you he has chest pain and a history of angina. Gord's speech indicates to you that his airway is patent at this time. The insertion of a nasopharyngeal airway will only serve to irritate his condition. Choice 3 is incorrect. Due to Gord's current complaint of chest pain and his history of angina you should begin cardiac monitoring as soon as possible and find out more about his heart condition. Choices 4 and 5 are correct. The correct answer is B.

2. In addition to dyspnea, which of the following manifestations would you expect to find in a patient suffering from smoke inhalation?
 1. Hemoptysis
 2. Muffled heart sounds
 3. Mediastinal shift
 4. Tachycardia
 5. Carbon rings around nares
 - A. 1, 3 and 4
 - B. 1, 4 and 5
 - C. 2, 3 and 5
 - D. 3, 4 and 5

This is a factual question. Smoke inhalation causes an irritation of the bronchial tree and alveoli. The resulting histamine response allows leakage of some red blood cells from the capillary bed. This leads to blood in the sputum. Choice 1 is correct. Muffled heart sounds and a mediastinal shift are

found in a variety of chest trauma situations but are not congruent with smoke inhalation. Choices 2 and 3 are incorrect. Smoke inhalation causes hypoxia in the body. This in turn causes a sympathetic nervous response resulting in tachycardia. Choice 4 is correct. The inhalation of smoke often leaves residual black carbon rings around the opening of the nostrils. Choice 5 is correct. The correct answer is B.

3. With oxygen, Gord's breathing is improving. Which of the following questions are most important to ask Gord at this time?
1. "Are you burned anywhere?"
 2. "Is the chest pain worse on inspiration?"
 3. "When did your chest pain begin?"
 4. "Have you taken any nitroglycerin?"
 5. "How long were you in the fire without air?"
- A. 1 and 4
 - B. 2 and 5
 - C. 3 and 4
 - D. 3 and 5

This is a judgement question. At this time it is important to determine whether Gord meets the criteria for the administration of nitroglycerin and/or ASA under the Suspected Cardiac Ischemia Chest Pain Medical Directive as per the ALS PCS. The two key questions which help you to determine which, if any, medications to administer to Gord are questions 3 and 4, these are correct choices. Gord is in distress and may not be able to determine if he is burned anywhere. A proper secondary assessment of Gord will be required to determine if he has suffered any burns. Choice 1 is incorrect. Chest pain which is worse on inspiration corresponds to a number of conditions, however, none of these conditions are suspected given this scenario. Choice 2 is incorrect. While it may be relevant to know how long Gord was in the fire without air at some point, it is not a priority at this time as this will have no impact on the immediate treatment you provide for Gord. Choice 5 is incorrect. The correct answer is C.

4. Which of the following statements are true of a myocardial infarction?
- A. As the myocardium fails there is a resultant decrease in cardiac output. This drop in cardiac output causes a state of sepsis throughout the body.
 - B. Histamine is released in the heart causing a leakage of fluid from the capillary bed in the myocardium. This results in fluid accumulating in the pericardial sac and a subsequent cardiac tamponade.
 - C. During a myocardial infarction all cells of the myocardium become ischemic. This ischemia is reversible throughout the heart provided there is adequate collateral circulation in the myocardium.

- D. There is a reduction of cell membrane stability of the affected myocardial cells as they become hypoxic. This causes the myocardium to become more susceptible to cardiac arrhythmias such as ventricular fibrillation.

This is an application of theory question. Myocardial infarction results in a decreased cardiac output which may lead to cardiogenic shock. It does not cause septic shock in the body. Answer A is incorrect. Histamine is released during an infarct, however there is not enough fluid to cause a cardiac tamponade. Answer B is incorrect. A myocardial infarction occurs when there is irreversible necrosis to a selected region of myocardial cells. Reversible ischemia to the cells of the myocardium is classified as angina. Answer C is incorrect. Injured myocardial cells become more irritable and are prone to arrhythmias. The most life threatening arrhythmia is ventricular fibrillation. The correct answer is D.

Further questioning of Gord reveals that his chest pain began about 20 minutes ago and he has mild shortness of breath. He is prescribed nitroglycerin spray but he left it back at the station. His chest pain is still present, although it has improved since he has been on the oxygen. An assessment of Gord's vital signs reveal his pulse to be 92, full and regular, blood pressure of 160/90, respirations are 24 shallow and regular with fine crackles in the bases. His skin is warm, moist and flushed. He has no contraindications for any medications.

5. Your best course of action at this time is to:
1. Administer nitroglycerin, 0.3 or 0.4 mg SL and repeat if necessary in 5 minutes.
 2. Administer salbutamol 5.0 mg. nebulized with oxygen at 6-8 L/min.
 3. Administer two 80 or 81 mg. ASA tablets to Gord and instruct him to chew them before he swallows them.
 4. Refrain from administering any medications to Gord at this time as the oxygen is improving his condition. Re-evaluate this decision in 5 minutes.
- A. 4 only
B. 1 and 2
C. 1 and 3
D. 1, 2 and 3

This is an interpretation question. Gord meets the protocol for the administration of nitroglycerin at this time. Choice 1 is correct. Gord is not exhibiting wheezing at this time and the administration of salbutamol may worsen his cardiac ischemia. Choice 2 is incorrect. Gord meets the protocol for the administration of ASA at this time. Choice 3 is correct. Waiting to see if the oxygen will continue to help is a time-consuming management which may not be effective. Choice 4 is incorrect. Therefore Answer C is correct.

