

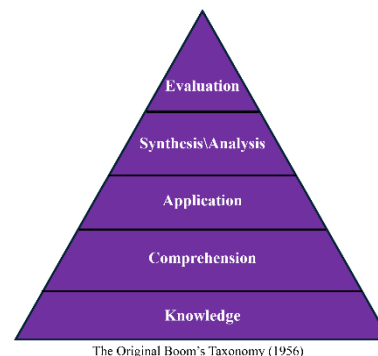
Advanced Practice Paramedic (APP)/Resuscitation Officer (RO) Test Preparation Guide

This guide is to assist those taking the Advanced Practice Paramedic (APP) or Resuscitation Officer (RO) exam from the Global Emergency Medical Registry.

Exam Composition:

The exams are 100 questions in length, the questions are drawn from the GEMR test bank for the APP and RO certification levels. The exam consists of multiple choice and true/false questions. The exam utilizes Blooms Taxonomy for question development and the exams, although may vary, generally have the following makeup:

50%	Knowledge	(Recall of information, Observation, Listing, Locating, Naming) and
	Comprehension	(Understanding, Translating, Summarizing, Demonstrating, Discussing)
25%	Application	(Utilizing and Applying Knowledge, Using Problem Solving Methods, Designing)
15%	Synthesis	(Using old concepts to create new ones, Inferring, Predicting, Combining) and
	Analysis	(Identify the parts and explaining how the steps work together in the overall structure or purpose)
10%	Evaluation	(Evaluating outcomes, Solving, Judging, Recommending, Rating)



Exam Time:

The candidate has 2 hours to complete the exam.

Exam Oversight:

GEMR requires the candidate to agree to exam oversight through an online exam Artificial Intelligence (AI) system. The system will monitor the candidate's desktop and activate the laptop or desktop computer camera.

If the Artificial Intelligence system finds the candidate behaving outside its set perimeters or accessing resources over the computer or phone during the exam, the AI will auto report this to the GEMR audit committee and stop the exam.

Thus, to sit for a GEMR exam, the candidate must have internet access, a laptop or desktop computer, and the ability to be present without interruptions for the time the exam is in process.

Question Origins:

Questions are written from the objectives listed on the "Information & Reference" tab at gemr.org

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What Should a Candidate Review:

A candidate who completes a program of study that includes all didactic, skill, and clinical objectives listed for their certification level at gemr.org should have only light to moderate difficulty with the exam.

Should the candidate decide to study prior to taking the exam, which we highly recommend, we would suggest the candidate might wish to review the following materials:

Websites:

1. The Global Emergency Medicine Registry Blog (<https://www.gemr.org/blog/>) where GEMR provides bi-weekly updates on current science and materials. We also post longer explanations of new science and summaries of basic science concepts.
2. The Resuscitation Group Blog (<https://www.resuscitationgroup.com/blog/>), where they answer quite a few of the more in depth questions that students have inquired about recently, as well as a new science summary paper posted about every two weeks on average.
3. ILCOR Publications page (<https://ilcor.org/publications>), this can be a helpful reference for the current guidelines; please remember that current guidelines are always a year behind to allow for review of science from the previous year.
4. Circulation, the journal of the American Heart Association (<https://www.ahajournals.org/journal/circ>) has an in-depth site with multiple resources for the AHA instructor.
5. Resuscitation, the journal of the European Resuscitation Council (<https://www.resuscitationjournal.com/>) has a wide variety of resources for resuscitation science and somewhat different takes on current science than the North American view.
6. STATPEARLS (<https://www.statpearls.com/home/index>); Covering 172 medical specialties, the organization helps practitioners make the most informed clinical decisions.

Books:

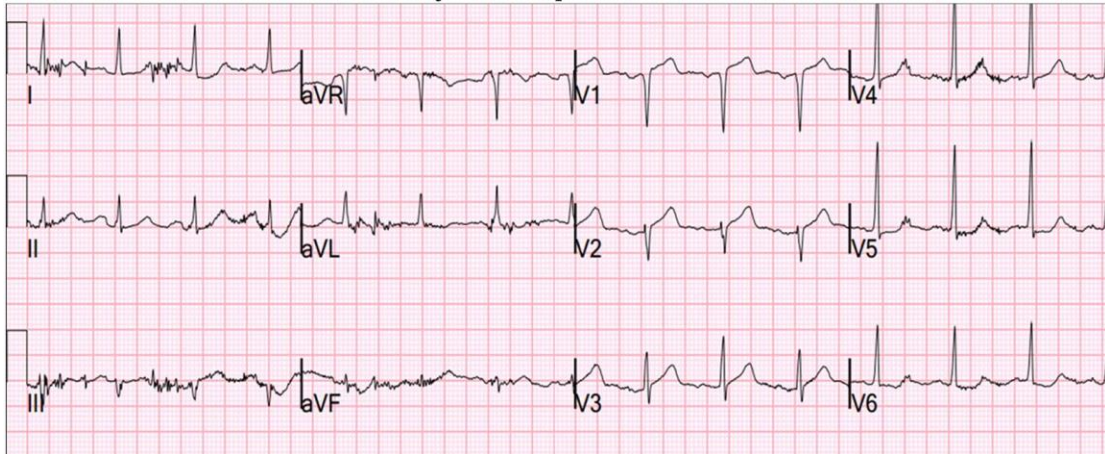
1. Emergency Department Resuscitation of the Critically Ill, 2nd Edition; Michael E. Winters, MD, FACEP; 1/2017
2. Miller's Basics of Anesthesia 8th Edition; Manuel Pardo MD; 2022
3. Emergency Medicine: The Principles of Practice 7th Edition, Kindle; Sascha Fulde MD; 2023
4. Advanced Trauma Care Program Reference Manual; Michael Christie, ATREC Inc, 2024
5. Basic Emergency Ultrasound Student Reference Manual; Michael Christie, ATREC Inc, 2024

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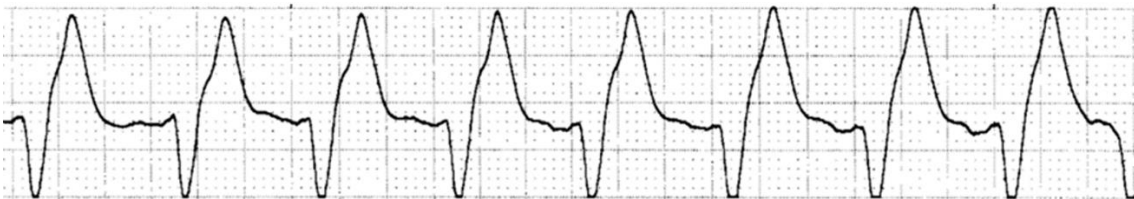


Sample Questions:

1. In the 12 lead ECG below, what is your interpretation?



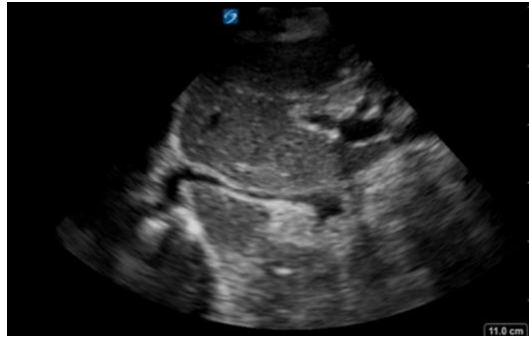
- STEMI Inferior
 - STEMI Anterior
 - STEMI Septal
 - Aberrantly conducted ECG
2. Your patient septic shock patient has a pH = 7.2, HCO₃ = 9, CO₂ = 30 mmHg; based on these values, you would consider the patient to be experiencing:
- Metabolic Acidosis
 - Respiratory Acidosis
 - Metabolic Alkalosis
 - Respiratory Alkalosis
3. Your 56 year old patient, with the rhythm below, is unresponsive with the following vitals: Respiratory Rate: 24, SpO₂: 88% on room air, EtCO₂: 28mmHg with normal waveform, Temperature: 37C, BP = 80/60, Heart Rate: 100, AVPU: Unresponsive. Your next treatment should include all of the following EXCEPT?



- Airway management and oxygenation
- Vascular access and fluid resuscitation as required
- Amiodarone
- Consider hyperkalemia, type IA medication toxicity, or reperfusion arrhythmias.

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4. Large bore venous access above the diaphragm is essential in critically ill and cardiac arrest patients for fluid resuscitation for which of the following statements best exemplify this concept?
- This type of access allows for the rapid administration of resuscitative fluids and blood products directly into the central circulation and heart, making it more efficient in emergency situations.
 - Large bore access allows for better long-term access and infusion of medications.
 - Large bore would include an 18 gauge IV in the forearm.
 - Large bore access above the level of the diaphragm does not effect the outcome of patient in critical events.
5. Which of the following is a correct statement in relationship to the treatment of critical trauma patients?
- Lactated Ringer's solution at 20 ml/kg is the most effective fluid for resuscitation in critical trauma patients.
 - Endotracheal intubation should be obtained in the critical trauma patient in the first moments of the event, since most patients die from airway compromise.
 - Studies have demonstrated that the early administration of whole blood in the prehospital phase can significantly benefit trauma patients with hemorrhagic shock.
 - Spinal immobilization is the gold standard for the initial approach to the critical trauma patient.
6. A 60 y/o male with a history of hypertension and a STEMI five years ago, presents to you with generalized weakness and fatigue. Vital Signs: SpO₂: 93% (room air), EtCO₂: 30 mmHg with normal waveform, Respiratory rate: 20, Pulse 110, BP: 58 mmHg MAP. On physical exam, the patient appears non-toxic and was able to answer questions appropriately, lung sounds are clear and equal. 12 Lead ECG is unremarkable. Ultrasound exam of the IVC appears to the right. Patient is on 15L O₂ via NRB and has a 16g IV in left cephalic vein.
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- What is your next step with this patient?
- Prepare for advanced airway secondary to poor oxygenation
 - Fluid bolus to improve poor preload effecting cardiac output
 - Presser infusion to resolve hypotension
 - Transport immediately for stabilization

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7. Your patient is a 66 y/o, 100 kg, male who was complaining of severe chest pain (8/10) when he went into cardiac arrest. After 20 minutes of cardiac arrest management, you have succeed in converting the patient to an organized rhythm from ventricular fibrillation. During arrest management, you obtained a 14g IV in right antecubital fossa, intubated with a 7.5 ET Tube and ventilated at 10 bpm with 500 ml of volume per breath, six shocks were delivered (3, anterior-lateral and 3, Dual Sequence External Defibrillation) and the patient received 300mg Amiodarone. Currently the patient has returned circulation with the following vitals: GCS 3, BP: 65 mmHg MAP, Respiratory rate 10 via BVET, Pulse 86 in Sinus Rhythm with ST Elevation in seven leads on 12 Lead ECG. What is your next appropriate intervention?
- Fluid challenge to improve MAP and draw labs for further review.
 - Switch patient to an epinephrine infusion at 20 mcg/min to improve MAP.
 - Increase ventilatory effort to 20 bpm and administer 150 mg Amiodarone IV infusion.
 - Sedate patient with Ketamine and transport for immediate angiography and percutaneous coronary intervention
8. Which of the following medications is NOT recommend for routine use in cardiac arrest management, per the 2023 Focused Update on Adult Advanced Cardiovascular Life Support?
- Lidocaine
 - Epinephrine
 - Steroid
 - Calcium
9. Which of the following medications may have a neuroprotective effect in cardiac arrest patients?
- Epinephrine
 - Steroid
 - Ketamine
 - Lorazepam
10. Which of the following medications may convert Ventricular tachycardia?
- Epinephrine
 - Adenosine
 - Ketamine
 - Propofol



Sample Question Answers:

1. C

There is STE in V1 and V2, and ST depression in I, aVL, V5, and V6. Is it normal variant STE? Or is it anterior STEMI? ST depression in the lateral leads should not be seen in normal variant STE. Because of this ST depression, STEMI should be diagnosed until proven otherwise, and the STE equation should not be used; if it were used, with $STE_{60V3} = 2$, $QTc = 412ms$, $RAV4 = 20mm$, the value would be 20.18 {less than 23.4 would indicate normal variant}. The equation is falsely negative because most of the ischemia is in the septum, not the anterior wall, so that STE in V3 is not high and R-wave amplitude in V4 is not affected.
2. A

Metabolic Acidosis: pH is low, HCO_3 is low, CO_2 is low but inconsequential
3. C

Wide complex tachycardia treated as VT has a long history of poor outcomes; the initial study in this area of inquiry was “Treatment of “slow VT” may induce asystole”; McLean, et al; Ann Emerg Med, 2000. When the rhythm is wide and less than 150, it is very unlikely to be VT and when less than 130 is NOT V-Tach
4. A

Large bore venous access above the diaphragm is essential in critically ill and cardiac arrest patients for fluid resuscitation. This type of access allows for the rapid administration of resuscitative fluids and blood products directly into the central circulation and heart, making it more efficient in emergency situations (Kirkpatrick, 2023; GEMR Blog “Why large bore venous access above the level of the diaphragm is critically important in critically ill and cardiac arrest patients for fluid resuscitation.”
5. C

Studies have demonstrated that the early administration of whole blood in the prehospital phase can significantly benefit trauma patients with hemorrhagic shock (Mapp et al., 2020; Rangrass, 2022; Shackelford et al., 2021). GEMR Blog, “Why whole blood is the best volume for critically ill trauma patients in the prehospital setting?”



6. B
In cases of poor diastolic refilling secondary to hypovolemia, fluid resuscitation plays a crucial role in restoring intravascular volume and improving cardiac performance. Hypovolemia can lead to inadequate cardiac preload, affecting diastolic function (Chen et al., 2021). GEMR Blog, “Fluid Resuscitation in poor diastolic refilling secondary to hypovolemia?”
7. D
Sarah M. Perman, MD, MSCE, FAHA, Vice Chair, et Al. 2023 American Heart Association Focused Update on Adult Advanced Cardiovascular Life Support: An Update to the American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*, Volume 149 • Number 5 • 30 January 2024, Pages: e254 - e273. PubMed: 38108133. PERCUTANEOUS CORONARY INTERVENTION AFTER CARDIAC ARREST
8. D
Sarah M. Perman, MD, MSCE, FAHA, Vice Chair, et Al. 2023 American Heart Association Focused Update on Adult Advanced Cardiovascular Life Support: An Update to the American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*, Volume 149 • Number 5 • 30 January 2024, Pages: e254 - e273. PubMed: 38108133. NONVASOPRESSOR MEDICATIONS DURING CARDIAC ARREST
9. C
The neuroprotective effects of ketamine in post-cardiac arrest patients have garnered significant attention in recent years, particularly due to its potential to mitigate the neurological damage that often follows cardiac arrest. Ketamine, an NMDA receptor antagonist, has been shown to possess neuroprotective properties, which may be beneficial in the context of post-cardiac arrest syndrome characterized by hypoxic-ischemic brain injury (HIBI) (Ornowska et al., 2022; Katz et al., 2021). The Resuscitation Group Blog, Ketamine’s Neuroprotective Effect in Post Cardiac Arrest Patients
10. B
The Resuscitation Group Blog, “Adenosine will convert Ventricular Tachycardia”