

Students' Name:..... ID:.....

**Lab Activity Objectives:**

**By the end of this case discussion students should be able to:**

- 1- Receive, identify, and confirm the necessary components of standing or verbal medication order.
- 2- Demonstrate the procedure of inserting intravenous (IV) catheter.
- 3- Demonstrate the proper procedure of medications given as IV bolus

**Part-1: Procedures for IV Cannulation:**

- IV insertion in the hand and wrist, and the forearm veins that traverse the antecubital fossa
- IV insertion in the external jugular vein

**Teaching Methods:**

- Educational videos
- Instructor demonstration
- Student demonstration (especially for IV insertion in the hand and wrist, and the forearm veins that traverse the antecubital fossa)

**Part-2: Bolus Intravenous Administration Procedures:**

**Teaching Methods:**

- Educational videos
- Instructor demonstration
- Student demonstration

**Helpful Materials:**



**Student Activity-1: Medication Administration as IV Bolus**

**Hypothetical case scenario:**

A 55-year old man fell down few minutes ago. You arrived to the scene while the victim was on the ground. You checked the pulse & breathing. There was no pulse & or breathing, and therefore, you started a CPR according to the basic life support that you took in school. The patient was still suffering from cardiac arrest. Thus, you checked the cardiac arrest algorithm” (see the last page) to select the right medication.

**Selected Medication:**

**Medication name, dose, route, & frequency:**

**Evaluation of medication administration:**

**Evaluation of medication administration:**

The student will be evaluated based on the rubric developed by **National Registry of Emergency Medical Technicians, Inc.** (see next page)

**Instructor comments:**



**National Registry of Emergency Medical Technicians  
Advanced Level Practical Examination**

**INTRAVENOUS THERAPY**

Candidate: \_\_\_\_\_ Examiner: \_\_\_\_\_

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

Level of Testing:     NREMT-Intermediate/85     NREMT-Intermediate/99     NREMT-Paramedic

Time Start: _____	Possible Points	Points Awarded
Checks selected IV fluid for: -Proper fluid (1 point) -Clarity (1 point)	<b>Not applicable this week. Will be assessed next lab session</b>	
Selects appropriate catheter	1	
Selects proper administration set	1	
Connects IV tubing to the IV bag	1	
Prepares administration set [fills drip chamber and flushes tubing]	1	
Cuts or tears tape [at any time before venipuncture]	1	
Takes/verbalizes body substance isolation precautions [prior to venipuncture]	1	
Applies tourniquet	1	
Palpates suitable vein	1	
Cleanses site appropriately	1	
Performs venipuncture -Inserts stylette (1 point) -Notes or verbalizes flashback (1 point) -Occludes vein proximal to catheter (1 point) -Removes stylette (1 point) -Connects IV tubing to catheter (1 point)	5	
Disposes/verbalizes disposal of needle in proper container	1	
Releases tourniquet	1	
Runs IV for a brief period to assure patent line	1	
Secures catheter [tapes securely or verbalizes]	1	
Adjusts flow rate as appropriate	1	
<b>Time End: _____</b>	<b>TOTAL</b>	<b>19</b>

Time End: \_\_\_\_\_

**TOTAL**    **19**

**CRITICAL CRITERIA**

- \_\_\_\_\_ Failure to establish a patent and properly adjusted IV within 6 minute time limit
- \_\_\_\_\_ Failure to take or verbalize body substance isolation precautions prior to performing venipuncture
- \_\_\_\_\_ Contaminates equipment or site without appropriately correcting situation
- \_\_\_\_\_ Performs any improper technique resulting in the potential for uncontrolled hemorrhage, catheter shear, or air embolism
- \_\_\_\_\_ Failure to successfully establish IV within 3 attempts during 6 minute time limit
- \_\_\_\_\_ Failure to dispose/verbalize disposal of needle in proper container

**NOTE:** Check here (\_\_\_\_\_) if candidate did not establish a patent IV and do not evaluate IV Bolus Medications.

**INTRAVENOUS BOLUS MEDICATIONS**

Time Start: _____	Possible Points	Points Awarded
Asks patient for known allergies	1	
Selects correct medication	1	
Assures correct concentration of drug	1	
Assembles prefilled syringe correctly and dispels air	1	
Continues body substance isolation precautions	1	
Cleanses injection site [Y-port or hub]	1	
Reaffirms medication	1	
Stops IV flow [pinches tubing or shuts off]	1	
Administers correct dose at proper push rate	1	
Disposes/verbalizes proper disposal of syringe and needle in proper container	1	
Flushes tubing [runs wide open for a brief period]	1	
Adjusts drip rate to TKO/KVO	1	
Verbalizes need to observe patient for desired effect/adverse side effects	1	
<b>Time End: _____</b>	<b>TOTAL</b>	<b>13</b>

Time End: \_\_\_\_\_

**TOTAL**    **13**

**CRITICAL CRITERIA**

- \_\_\_\_\_ Failure to begin administration of medication within 3 minute time limit
- \_\_\_\_\_ Contaminates equipment or site without appropriately correcting situation
- \_\_\_\_\_ Failure to adequately dispel air resulting in potential for air embolism
- \_\_\_\_\_ Injects improper drug or dosage [wrong drug, incorrect amount, or pushes at inappropriate rate]
- \_\_\_\_\_ Failure to flush IV tubing after injecting medication
- \_\_\_\_\_ Recaps needle or failure to dispose/verbalize disposal of syringe and needle in proper container

*You must factually document your rationale for checking any of the above critical items on the reverse side of this form.*

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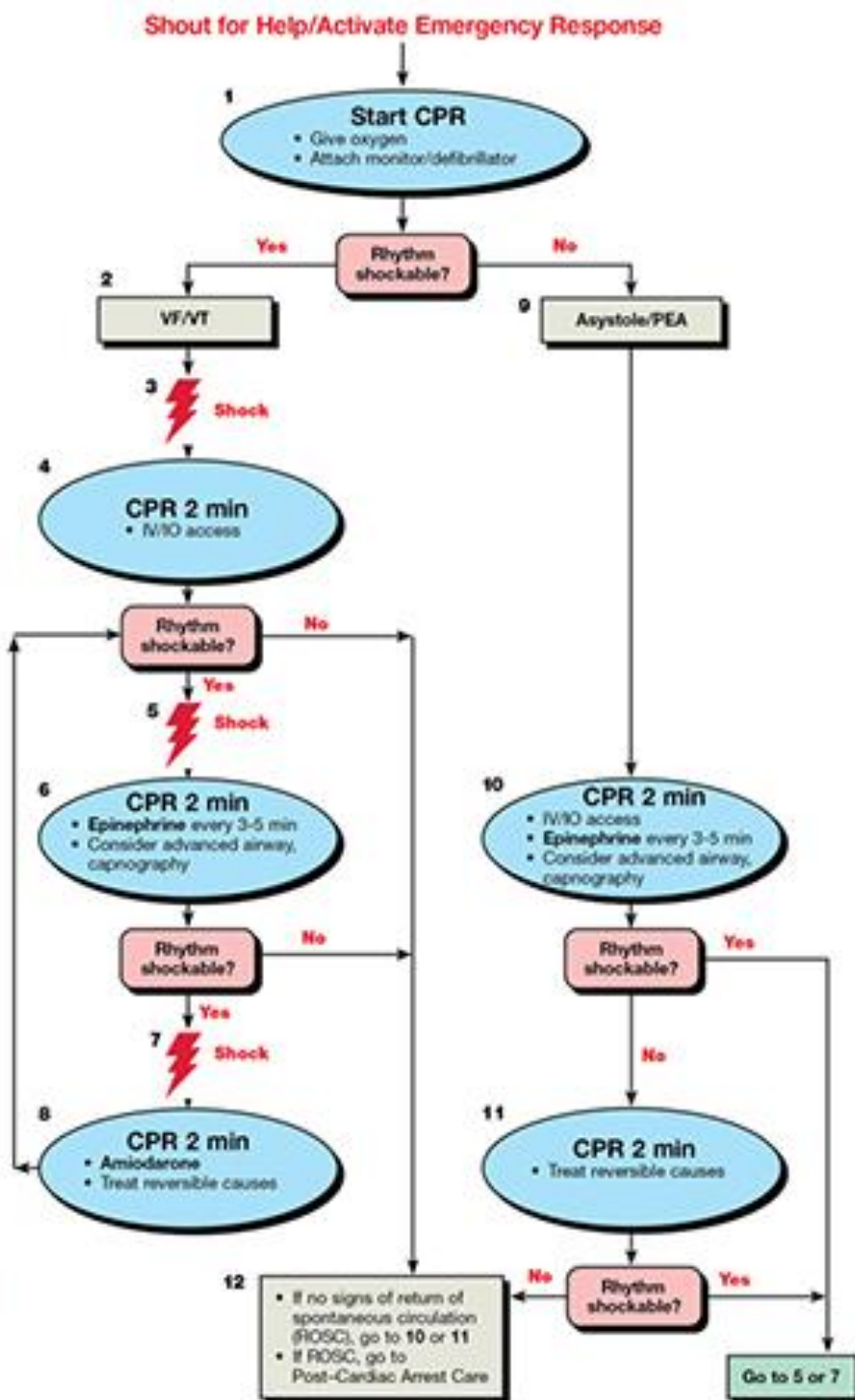
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# Cardiac Arrest Algorithm



## Adult Advanced Cardiovascular Life Support



### CPR Quality

- Push hard (≥2 inches [5 cm]) and fast (≥100/min) and allow complete chest recoil
- Minimize interruptions in compressions
- Avoid excessive ventilation
- Rotate compressor every 2 minutes
- If no advanced airway, 30:2 compression-ventilation ratio
- Quantitative waveform capnography
  - If  $P_{\text{ETCO}_2}$  <10 mm Hg, attempt to improve CPR quality
- Intra-arterial pressure
  - If relaxation phase (diastolic) pressure <20 mm Hg, attempt to improve CPR quality

### Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in  $P_{\text{ETCO}_2}$  (typically >40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

### Shock Energy

- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J; if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

### Drug Therapy

- **Epinephrine IV/IO Dose:** 1 mg every 3-5 minutes
- **Vasopressin IV/IO Dose:** 40 units can replace first or second dose of epinephrine
- **Amiodarone IV/IO Dose:** First dose: 300 mg bolus. Second dose: 150 mg

### Advanced Airway

- Supraglottic advanced airway or endotracheal intubation
- Waveform capnography to confirm and monitor ET tube placement
- 8-10 breaths per minute with continuous chest compressions

### Reversible Causes

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

