

**Hyperkalemia, PEA, asystole**

**I. Target Audience:** Medical Students 6<sup>th</sup> year of education.

**IV. Case Narrative**

**PATIENT:** 37 year old

**CC:** dyspnea & decreased mentality

**HPI:** *Use lay terminology as the voice of the patient*

He is a known CKD patient and had fever and generalized weakness for 5 days. He couldn't have the dialysis on last Saturday. His dyspnea was aggravated in this morning and called 103. During the EMS transportation, his mental status was decreased and he was just arrived in the ED resuscitation bed.

**PMHx:**

CKD

MEDICATIONS	ALLERGIES
unknown	unknown

**PSHx:** Not important

**SOCIAL Hx:**

unknown

**FAMILY Hx:**

unknown

**ROS:**

(+)dyspnea & decreased mentality

(-) Fever/chills, vomiting, diarrhea/constipation, blurred vision, numbness/motor weakness, abdominal pain, or urinary symptoms

**PHYSICAL EXAM:** *Those signs not demonstrable by the mannequin should be verbalized when students perform/verbalize the examination maneuver*

HR	BP	Temperature (oC)	O <sub>2</sub> Sats (RA)	RR
less than 24	50/0	37.3o	79%	absent

**GENERAL:** unconscious

**NECK:** Supple, no JVD

**PULM:** absent breathing

**CV:** Bradycardia, irregular rhythm, no murmur

**ABD:** Soft, NT/ND, + BS, no mass/HSM

**EXT:** no palpable pulses all extremities

**NEURO:** No focal deficit

**LABS:** See Appendix A

\*\*\*Pending throughout case (if participants appear to be struggling, can give them a positive troponin)

Amylase/Lipase Level		Comprehensive Metabolic Panel	
Arterial Blood Gas		Hepatic Panel	
Basic Metabolic Panel	X	Lactate/Cortisol Level	
Cardiac Markers	X	Thyroid Panel	
Coagulation Profile	X	Toxicology Screen	
Complete Blood Count (CBC)	X	Urinalysis	
CBC with differential		Urine HCG	

Additional Labs: none

**IMAGES:** See Appendix B

Angiogram		ECG	X
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CT Scan, with contrast		MRI	
CT Scan, without contrast		X-Ray	X
Echocardiogram		Ultrasound	

Additional Images: none

**CONSULTS:**

None

**CLINICAL PROGRESSION:**

History and physical, IV/O<sub>2</sub>/monitor ECG indicative of PEA. After physical exam and ECG (less than 10 sec) reading, participants should start CPR, activate catheterization lab and administer alpha/beta agonists (pressor agent and ino/chronotropes).

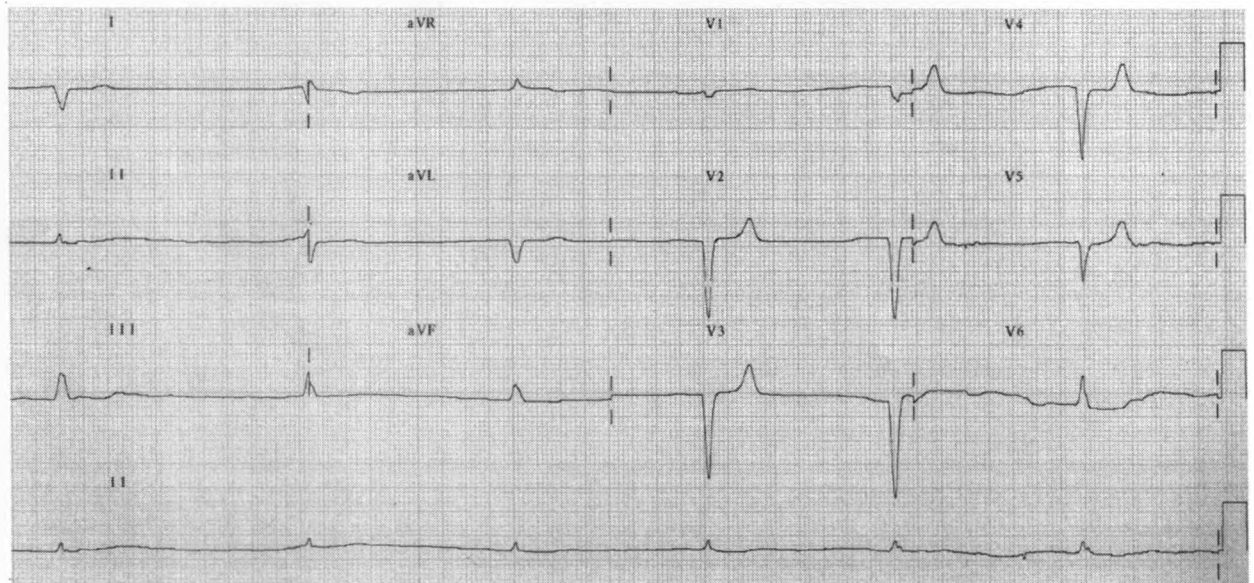
After 2 min of CPR and second rhythm check

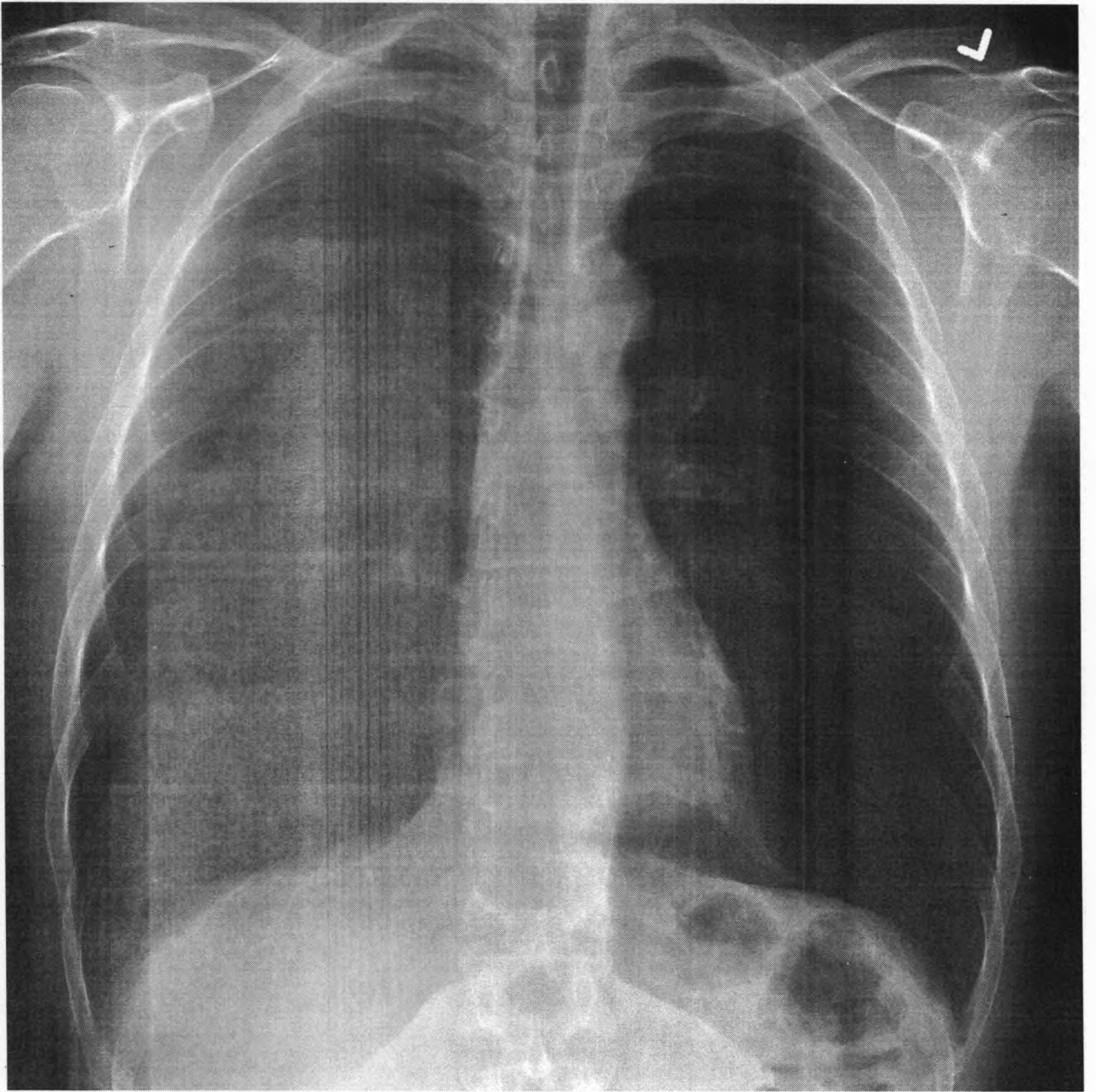
HR	BP	Temperature (°C)	O <sub>2</sub> Sats (RA)	RR
37	73/30	37.5 <sub>o</sub>	88%	absent

If CPR and medications are right, after 2 min of CPR:

HR	BP	Temperature (°C)	O <sub>2</sub> Sats (RA)	RR
56	80/50	37.5 <sub>o</sub>	94%	10

**Appendix: Lab values**





**Appendix: check list**

<b>Action:</b>	
<b>1. Early detection of cardiac arrest and high-quality CPR</b>	
Early to recognize the cardiac arrest and call for help (<10 sec )	0.5
Immediately start of chest compression (<10 sec )	0.5
Deep ( $\geq 5$ cm) and fast ( $\geq 100$ / min ) chest compressions	0.5
Allow complete chest recoil	0.5
Minimize interruption of chest compression (<10 sec )	0.5
Avoid excessive ventilation (1 breath / 6 ~ 8 sec )	0.5
<b>2. Early diagnosis of heart failure that does not require defibrillation</b>	
Recognize asystole (<10 s)	0.2
Apply the appropriate protocol	0.2
Immediately restore compression after rhythm check (<10 s)	0.2
Verbalize possible causes of cardiac arrest (4G and 4T)	0.2
Administer appropriate drugs and doses	0.2
<b>3. Enforce effective teamwork</b>	
Close communication	0.2
Clear instructions	0.2
Clear roles and responsibilities	0.2
Knows limitations	0.2
Review and summarize events	0.2
<b>SUMMARY (maximum of 5.0 points):</b>	

Head of the department,

Honored scientist of Ukraine, professor

Tarabrin O.O.

Curator of OSQE training,

Assistant

Suslov O.S.

**Required simulation equipment for the exam:**

№	Product name	Required characteristics	Quantity
1.	Simulator for CPR	<p>Full-height / torso simulator that meets the characteristics of an adult (male / female) and provides the ability to do the following:</p> <ul style="list-style-type: none"> <li>• conduction of a triple Safar maneur (the ability to flex / unwrap the neck);</li> <li>• insertion of nasopharyngeal / oropharyngeal tubes;</li> <li>• Artificial ventilation of lungs with registration of efficiency (mechanically using scales on a dummy or programmed with the help of a computer);</li> <li>• chest compression with registration of efficiency (mechanically using dummy scales or software using a computer);</li> </ul> <p><b><u>Preferred:</u></b></p> <ul style="list-style-type: none"> <li>• Ability to register pulse in main and / or peripheral vessels;</li> <li>• possibility of registration of arterial pressure;</li> <li>• the ability to change the color of the skin (pallor, cyanosis, etc.) depending on the actions of the person being tested;</li> <li>• possibility of registration of ECG by hardware complex.</li> </ul>	1 piece

**Перелік необхідного матеріально-технічного устаткування:**

№	Product name	Required characteristics	Quantity
1.	Ambu bag for artificial ventilation of the lungs	Standard Ambu bag for adults of 6-8 liters.	1 одиниця
2.	Bacterial filter for bag Ambu	Standard bacterial filter	1 одиниця

3.	Facial mask for artificial ventilation	Facial mask, rigid or soft, for conducting mechanical ventilation in adults of the size №3	1 одиниця
4.	Nasopharyngeal tube	To ensure patents air ways; size - depending on the mannequin, approx. 28-30 Fr	1 одиниця
5.	Oropharyngeal tube	To ensure patents air ways; size - depending on the mannequin, approx. n.3-4	1 одиниця
6.	Table for medical drugs	Medication table for simulating a niche / table in the reception room	1 одиниця
7.	Kidney-shape tray	Kidney-shape tray to simulate the covered field, waste balls, ampoules, and the like.	4 одиниці
8.	Empty labeled containers for needles and syringes	Containers for waste needles and syringes with markings, equipped with lid for atraumatic needle removal	2 одиниці
9.	Medical tripod	Medical tripod for placement of infusion solutions and holding in / in infusion	1 одиниця
10.	The torn-off notebook	The notebook is tidy for the ability to hold a student records during the exam, a volume of 96 sheets	4 одиниці
11.	Pencil HB	Pencil HB for the ability to hold student records during the exam	5 одиниць
12.	Phonendoscope medical	Phonendoscope for auscultation	2 одиниці
13.	Desktop clock	A desk clock for monitoring time, pulse counting, and more	2 одиниці

**List of required consumable medical material:**

№	Product name	Required characteristics	Quantity
1.	Vials marked "Adrenaline hydrochloride 0,1%"	Volume 1 ml , possible use of distilled water	Based on the number of students
2.	Vials marked "Sodium chloride solution	Volume 10 ml , possible use of distilled water	Based on the number

	0.9%"		of students
3.	Vials labeled " Amiodarone 300 mg"	Volume 2 ml , possible use of distilled water	Based on the number of students
4.	Vials labeled "Atropine 0,1%"	Volume 1 ml , possible use of distilled water	Based on the number of students
5.	Vials labeled "Alcohol 70%"	Volume 200 ml , possible use of distilled water	4 pcs.
6.	Vials marked "Sodium chloride solution 0.9%"	Volume 200 ml , possible use of distilled water	4 pcs.
7.	Syringe with a volume of 5 ml	Syringe with a volume of 5 ml	Based on the number of students
8.	Syringe with a volume of 20 ml	Syringe with a volume of 20 ml	Based on the number of students
9.	Systems for intravenous infusion	Systems for intravenous infusion	2 pcs.
10.	Cannulas for catheterization of peripheral veins	Size G18	4 pcs.
11.	Medical gloves, non-talc	The size of M, non-talc	Based on the number of students
12.	Sticky bandage	For fixation of peripheral cannula	2 rolls
13.	Cotton balls	To handle the field and hands	10 pcs.

\* Vials may be used many times, labeling is **mandatory**

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