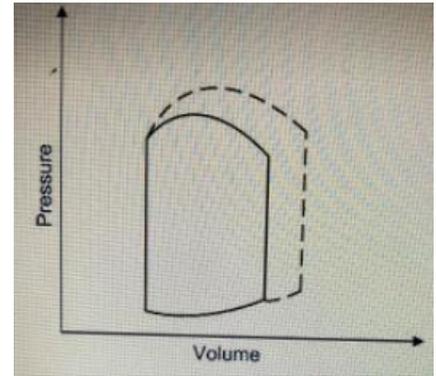


USMLE Uworld questions collection (WEEK3)

I) The solid line below depicts the pressure-volume loop for a 45-year - old hospitalized patient.

The change indicated by the dashed line may reflect which of the following?

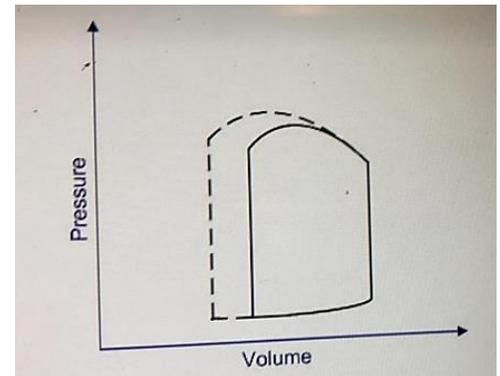
- A. Dobutamine infusion
- B. Normal saline infusion
- C. Abdominal aorta clamping
- D. Loss of contracting myocardial mass
- E. Blood volume loss



II) The pressure-volume loop for a 54 - year - old patient is shown below with a solid line.

Which of the following parameters is most likely to increase as a result of the change shown by the dashed line?

- A. Ventricular Preload
- B. End - diastolic pressure
- C. Ventricular afterload
- D. End - systolic volume
- E. Ejection fraction

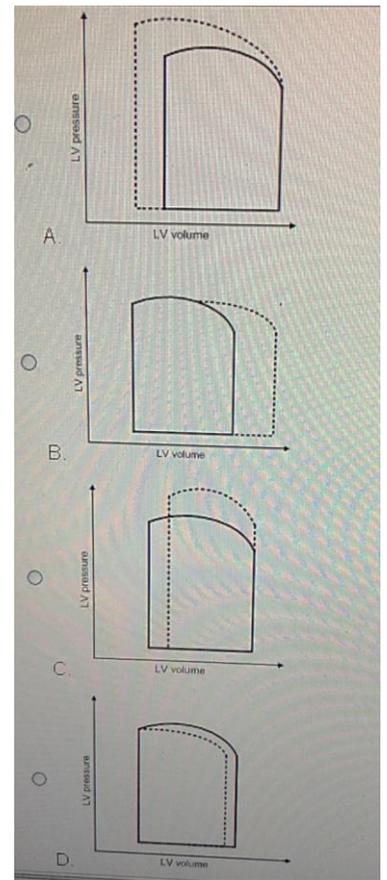


III) A 50 - year - old man is brought to the ER with severe dizziness and confusion. He states that he had an episode of chest pain and took several tablets of Nitroglycerin. His current medications include a daily Aspirin for heart attack prevention, an occasional Acetaminophen for headaches and occasionally Sildenafil for erectile dysfunction. His blood pressure is 50/20 mmHg and his heart rate is 120 beats / min. Which of the following cellular changes is most likely responsible for this patient's symptoms?

- A. Receptor down-regulation
- B. Gi protein phosphorylation
- C. Cyclic GMP accumulation
- D. Tyrosine kinase over-activity
- E. Enhanced phospholipid metabolism
- F. Tolerance development

IV) A 44 - year - old male is hospitalized with multiple injuries following a motor vehicle accident. An arteriovenous shunt created by the injury would most likely result in which of the following changes of the left ventricular pressure - volume loop? (not an easy one)

- A. A
- B. B
- C. C
- D. D



V) Invasive monitoring tools used on a 54 - year - old study participant reveal the following:

Arterial blood oxygen content 20 ml O₂ / 100 ml blood

Pulmonary artery diastolic pressure 12 mmHg

Left ventricular diastolic pressure 10 mmHg

Mean right atrial pressure 4 mmHg

Venous blood oxygen content 15 ml O₂ / 100 ml blood

What additional information is necessary to calculate cardiac output in this patient?

- A. Blood oxygen carrying capacity
- B. Blood hemoglobin concentration
- C. Oxygen consumption
- D. Respiratory quotient
- E. Arteriovenous difference in the oxygen content

VI) A 34 - year - old Caucasian male presents to the emergency department with recent - onset dyspnea and fatigue. There is no significant past medical history except for a mild respiratory illness one week ago. His blood pressure is 80/60 mmHg. His pulse is 120 beats per minute, regular, but weak. The pulse becomes undetectable to palpation during each inspiration. The jugular veins are distended. The lungs are clear to auscultation.

Which of the following do you most suspect in this patient?

- A. Acute fibrinous pericarditis
- B. Acute myocardial infarction
- C. Septic shock
- D. Constrictive pericarditis
- E. Cardiac tamponade
- F. Tension pneumothorax

VII) A 35 - year - old previously healthy man is evaluated for several episodes of syncope in the past 6 weeks. Physical examination is unremarkable. Echocardiogram shows no structural heart defect. An electrophysiologic study is performed during which catheters are passed into the patient's right and left atrium to record atrial electric potentials. Cardiac monitor currently shows normal sinus rhythm. Which of the following is the most likely earliest site of electric activation?

- A. Junction of left atrium and atrial appendage
 - B. Left atrium near the opening of pulmonary veins
 - C. Right atrium near the opening of inferior vena cava
 - D. Right atrium near the opening of superior vena cava
 - E. Right atrium near the septal cusp of tricuspid valve
-

VIII) A 53 - year - old man with a known history of hypertension comes to the emergency department with shortness of breath and chest tightness. The patient was playing in a poker tournament when his symptoms first began. He has a history of hypertension and is not compliant with his medications. His last medical follow - up was a year ago. Blood pressure is 195/115 mm Hg and pulse is 90 / min and regular. Lung examination reveals bibasilar crackles.

Nitroglycerin infusion is started and results in significant symptomatic improvement.

Repeat blood pressure is 165/90 mm Hg. Which of the following intracellular events is most likely responsible for the beneficial effects of this patient's treatment?

- A. Actin phosphorylation
 - B. Calcium release from sarcoplasmic reticulum
 - C. Enhanced cyclic mononucleotide degradation
 - D. Inositol triphosphate accumulation
 - E. Myosin dephosphorylation
 - F. Tyrosine kinase activation
-

- IX) A 43 - year - old male presents to your office with exertional dyspnea that has been progressing over the last three weeks. Pitting pedal edema and distended jugular veins are evident on physical examination. Which of the following substances has been increasingly produced by the pulmonary endothelium in this patient?
- A. Renin
 - B. Aldosterone
 - C. Angiotensin - converting enzyme
 - D. Arginine vasopressin
 - E. Prostaglandin E1
 - F. Angiotensinase

- X) A 84 - year - old man with a long - standing history of hypertension is brought to the emergency department with a dry cough and shortness of breath the patient has been unable to sleep in the flat position for the past 2 days. Blood pressure 192,102 mm Hg and pulse is 92 / min and regular physical examination web S4 and bibasilar crackles. He is started on intravenous NTG infusion and soon after reports significant symptomatic relief.

Which of the following changes are most likely to occur following administration of this medication?

- A. A
- B. B
- C. C
- D. D
- E. E
- F. F
- G. G

	Left ventricular end-diastolic pressure	Peripheral venous capacitance	Systemic vascular resistance
<input type="radio"/> A.	No effect	↑	↓
<input type="radio"/> B.	↓	↑	No effect
<input type="radio"/> C.	↑	↓	↑
<input type="radio"/> D.	↓	↑	↓
<input type="radio"/> E.	↓	↓	↓
<input type="radio"/> F.	↑	No effect	↓
<input type="radio"/> G.	↑	↑	↑

Answers

1	2	3	4	5	6	7	8	9	10
B	E	C	B	C	E	D	E	C	D

Good luck