1. In a patient without cardiac disease, depressed myocardial function in sepsis is **MOST** likely to be manifested by a decrease in which of the following?
   A. Coronary blood flow
   B. Left ventricular end-diastolic volume
   C. Left ventricular stroke work

2. Which of the following pharmacokinetic and dynamic parameters are **MOST** likely to account for improved effectiveness of beta-lactam antibiotics?
   A. Duration of drug concentration greater than mean inhibitory concentration
   B. Peak drug concentration
   C. Trough drug concentration

3. A 49-year-old man with acute renal failure is receiving continuous venovenous hemodialysis. Serum potassium concentration is 5.8 mEq/L. Increasing which of the following is **MOST** likely to increase potassium clearance in this patient?
   A. Dialysate flow rate
   B. Rate of fluid replacement
   C. Ultrafiltration rate

4. A 39-year-old woman is brought to the emergency department by ambulance after being found unconscious. She has a history of major depressive disorder. Temperature is 37°C, blood pressure is 130/70 mmHg, heart rate is 120 bpm, and respiratory rate is 22/min. The patient is comatose, and her pupils are fixed and dilated. Glasgow Coma Scale score is 5. Laboratory studies of serum show:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Sodium</td>
<td>134 mEq/L</td>
</tr>
<tr>
<td>Chloride</td>
<td>110 mEq/L</td>
</tr>
<tr>
<td>Potassium</td>
<td>4.8 mEq/L</td>
</tr>
<tr>
<td>Bicarbonate</td>
<td>5 mEq/L</td>
</tr>
<tr>
<td>BUN</td>
<td>6 mg/dL</td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td>Glucose</td>
<td>360 mg/dL</td>
</tr>
<tr>
<td>Osmolality</td>
<td>365 mOsm/kg</td>
</tr>
</tbody>
</table>

Arterial blood gas analysis shows:

<table>
<thead>
<tr>
<th>PaO2</th>
<th>380 mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>PaCO2</td>
<td>32 mmHg</td>
</tr>
<tr>
<td>pH</td>
<td>6.9</td>
</tr>
</tbody>
</table>

Measurement of which of the following serum concentrations is the **MOST** appropriate next step to confirm the diagnosis?
A. Ethanol  
B. Methanol  
C. Salicylate

5. A 70-kg man with a history of COPD and ischemic heart disease is admitted to the ICU for management of community-acquired pneumonia. He receives mechanical ventilation for one week. While undergoing a spontaneous breathing trial, he immediately develops wheezing, tachycardia, and hypotension. Which of the following is the **MOST** likely cause of these clinical findings?
A. Decreased FRC  
B. Increased left ventricular afterload  
C. Increased pulmonary vascular resistance

6. An unresponsive 59-year-old woman is admitted to the ICU following a motor vehicle collision. Ten minutes after ICU arrival, she develops hypotension with a blood pressure of 82/52 mmHg. The following bedside transthoracic echocardiography parasternal long axis views are obtained:

https://vimeo.com/321976613

Administration of which of the following medications is **MOST** appropriate?
A. Epinephrine  
B. Milrinone  
C. Phenylephrine
ANSWER KEY

1. C
2. A
3. A
4. B
5. B
6. C