Answers to Study Questions

1. A 6-month-old female presents to the ER after 24 hours of vomiting and diarrhea. Her HR is 180. She is cool and mottled and barely cries when she is examined. Based on her history, a diagnosis of hypovolemic shock is suspected. Which of the following fluids should be given to her for initial resuscitation?

   a. whole blood
   b. 5% dextrose solution and water (D5W)
   c. normal saline solution
   d. 5% albumin

Answer: c. Normal saline is the initial fluid of choice for patients suspected of hypovolemic shock. Whole blood would be indicated for a trauma victim and dextrose containing solutions may increase the glucose level causing an osmotic diuresis thus worsening the hypovolemic state. Albumin could be used as a second line but not for initial resuscitation.

2. Which of the following congenital defects puts an infant at risk for developing congestive heart failure while awaiting surgical repair?

   a. atrioventricular canal defect
   b. Tetralogy of Fallot
   c. pulmonary valve stenosis
d. atrial septal defect

**Answer:** a. Unrepaired AVCD provides increased pulmonary blood flow once the PVR has decreased. Pulmonary overcirculation is responsible for the signs and symptoms of CHF.

3. Which of the following clinical signs should NOT necessarily be considered reassuring in a patient admitted with hypovolemic shock?

   a. warm extremities
   b. normal urine output
   c. normal blood pressure
   d. awake and alert infant

**Answer:** c. Compensatory mechanisms help provide normal blood pressure even in the face of shock. Do not be reassured unless all of the other signs are within normal limits. Warm extremities, good urine output, and an awake, alert infant are reassuring signs.

4. Adenosine is an antiarrhythmic agent used to treat which of the following arrhythmias?

   a. bradycardia
   b. normal sinus rhythm
   c. supraventricular tachycardia
   d. complete heart block
Answer: c. Adenosine treats SVT by producing temporary block at the AV node.

There is no treatment for normal sinus rhythm. Complete heart block requires a pacemaker and the treatment of bradycardia depends on the underlying cause.

5. Which of the following congenital defects requires that the ductus arteriosus remains open for pulmonary blood flow so that the infant can survive until surgical intervention?

a. AVCD

b. tricuspid atresia with no VSD

c. ventricular septal defect

d. atrial septal defect

Answer: b. In tricuspid atresia with no VSD there is no way for blood to get to the lungs without a PDA. The infant would not survive. This is termed a ductal dependent lesion. AVCD, VSD, and ASD do not limit pulmonary blood flow.

6. Which clinical findings are often associated with a hypercyanotic spell (Tet spell) in an infant with Tetralogy of Fallot?

a. tachycardia, normal oxygen saturations

b. severe cyanosis, pallor, tachypnea

c. normal respirations with cyanosis

d. apnea and tachycardia
Answer: b. These infants increase their respiratory rate in an effort to increase their oxygenation due to obstruction of the right ventricular outflow tract. They become quite cyanotic due to decreased pulmonary blood flow.

7. The best treatment for hypertension in the obese child with no underlying heart or renal disease is:

   a. ACE inhibitors.
   b. weight loss.
   c. fluid restriction.
   d. digoxin.

Answer: b. Most obese children respond to weight loss alone. Fluid restriction is not a treatment for children. And medications are not indicated unless the hypertension persists despite weight loss or the child develops symptoms secondary to high blood pressure.

8. You are caring for a 4-month-old infant who has a large ventricular septal defect and a known left-to-right shunt. Which of the following clinical pictures best fits the description of an infant with a left-to-right shunt?

   a. small heart on chest x-ray, adequate weight gain, good feeder
   b. cardiomegaly on chest x-ray, diastolic murmur, good feeder
   c. bradycardia, no murmur, good stamina
   d. cardiomegaly, poor weight gain, poor feeder
Answer: d. Infants with large left-to-right shunts are at risk for the development of CHF. Signs and symptoms of CHF include poor feeding, poor weight gain, and cardiomegaly. VSDs generally produce a systolic murmur.

9. Pacemakers are indicated for:
   a. complete heart block.
   b. SVT.
   c. ventricular fibrillation.
   d. normal sinus rhythm.

Answer: a. Pacemakers are necessary for complete heart block to provide atrial and ventricular synchrony. SVT is treated with adenosine, ventricular fibrillation with defibrillation. There is no treatment for normal sinus rhythm.

10. Acute rheumatic fever primarily affects which two heart valves?
    a. mitral and tricuspid
    b. pulmonary and aortic
    c. mitral and aortic
    d. tricuspid and pulmonary

Answer: c. ARF primarily damages the aortic and mitral valve if untreated. It is a primary etiology for mitral and aortic valve disease in developing countries.