QUESTIONS FOR CARDIOLOGY HARVEY STUDENTS

1. Define, either in your own words or mathematically;

   resistance
   compliance
   flow

2. Give two examples of compliance in the circulatory system. Compare their compliance values.

3. Give an example of a pathological resistance and normal resistance

4. Pulse pressure is determined primarily by what two physical characteristics of the circulatory system?

5. A hospitalized patient has pale, cool, and dry skin and a heart rate of 120 and BP of 90/70. In the most general terms where is the problem likely to be and why?

6. A cardiac output on is done on the above patient and stroke volume found to be 25 ml. What is cardiac output; systemic resistance?

7. A 28 .y.o. 50 kg female is seen because of a 7% weight loss in 6 months, weakness and nervousness: Heart rate is 90 and BP 130/60. Her skin is warm and moist. In the most general terms, where is the circulatory anomaly?

8. Systemic resistance is 12 mmHg/L/min in the above case. What is her stroke volume?

c:\msoffice\winword\harvwet

Answers for Cardiology Harvey Questions:

1. Resistance is the relation between pressure and flow $\frac{pressure}{flow}$ = resistance.

   Compliance is the relation between change in volume and change in pressure.

   $$\text{Compliance} = \frac{\Delta\, pressure}{\Delta\, resistance}$$

   Flow is the change in volume with time.

   $$\text{Flow} = \frac{\Delta Volume}{\Delta Time}$$

2. Atria, ventricles of heart-arteries and veins. Veins and atria are more compliant.

3. Any stenotic valve, increased systemic resistance in E.H.; arterioles.

4. Stroke volume and aortic compliance.

5. A pump problem (vs systemic problem). Signs indicate poor perfusion. High heart rate indicates attempt to maintain C.O., probably in face of decreased stroke volume.

6. 120 PBM x 25 ml/B = 3000 ml/min.

   $\frac{90-70}{3} + 70 \approx 7 + 70 = 77$ mmHg ; $\frac{77 mmHg}{3 L/\min} = 25\ \frac{mmHg}{L \min}$

7. Peripheral circulation (decreased resistance).

8. $\frac{130-60}{3} + 60 = 23 + 60 = 83\ mmHg\ mean\ bp$

   Flow (cardiac output) = $\frac{pressure}{resistance} = \frac{83\ mmHg}{12\ mmHg / L / \min} = 6.9$ L/min.

   Cardiac output = SV x HR $SV = \frac{CO}{HR} = \frac{6900\, ml}{90\, BPM} = 76.7$ ml.