Syllabus	
Topic	Aortic Stenosis

A 70-year-old woman with severe aortic stenosis presents for an open aortic valve replacement (AVR)

a)
What value for i) peak flow velocity, ii) mean pressure gradient and iii) valve area would indicate <u>severe</u> aortic stenosis? (3 marks)

i. Peak flow velocity: …….

ii. Mean pressure gradient: ……

iii. Valve area: ……

b)
List 3 specific cardiac investigations which may assess the severity of this woman's disease (3 marks)

1. ……
2. ……
3. .....

c)
List 6 steps in the pathophysiology of aortic stenosis (6 marks)

1. ……
2. ……
3. .....
4. ……
5. ……
6. .....

d)

Give 5 anaesthetic haemodynamic goals for this patient (5 marks)

1. ……
2. ……
3. ……
4. ……
5. ……

e)

Give 3 alternative management options for severe aortic stenosis where surgery is deemed inappropriate (3 marks)

1. ……
2. ……
3. ……

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Q	Answer	Mark	Guidance
a)	i. Peak flow velocity: 4m/s ii. Mean pressure gradient: >40mmHg iii. Valve area: <1cm^2	3	
b)	• Echocardiography/TOE • Cardiac catheterisation (left heart) • Cardiac MRI to assess consequences of stenosis	3	
c)	• Valve narrowing (age, calcification, infection) causes obstruction to LV outflow • LV hypertrophies as higher LV pressure is required to eject blood (increased afterload) • Initially systolic function/LVEF% maintained with normal cavity size • Higher O_2 demand with subendocardial ischaemia • Diastolic dysfunction with impaired filling and impaired relaxation • Pulmonary congestion and raised PA pressure • LV starts to fail with increase in cavity size • Fixed output state with inability to compensate for times of increased flow demand • Blood accelerates through narrowed valve with associated fall in coronary perfusion pressure due to Bernoullis principle.	6	
d)	• Maintain myocardial oxygen delivery using invasive monitoring to keep systolic and diastolic pressures within 20% baseline • Optimise preload/intravascular volume to fill non-compliant LV – CO monitoring guided • Maintain afterload with vasopressors to maintain adequate MAP and		

	coronary perfusion which is dependent on aortic root pressure • Maintain contractility/avoid negative inotropes and may require positive inotropes • Maintain sinus rhythm for atrial kick (greater contribution to ventricular filling in AS) • Maintain HR 60-80bpm to allow for adequate diastole for coronary perfusion and ventricular filling/reduced O2 demand – adequate analgesia/beta blockade with pacing	5	
e)	• Transcatheter aortic valve implantation (TAVI) • Balloon valvotomy • Medical/conservative management	3	

References: