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STOP BANG

- STOP BANG OSA screening score for presence of OSA:

- ▶ Snore loudly
- ▶ Tired with daytime somnolence
- ▶ Observed apnoeic episodes
- ▶ Pressure = HTN
- ▶ BMI >35
- ▶ Age >50
- ▶ Neck circumference >40cm
- ▶ Gender = Male

↳ score:

- ≥3 = high risk; sensitive but low specificity
- ≥5 = high risk OSA; high sensitivity & specificity

AHI Index

- AHI (Apnoea or hypopnoea index) = total episodes in night/number of hours slept

↳ not universally defined but ↓airflow by 30% or >4% desat an example

- ▶ index represents severity of OSA
- ▶ grading:
 - <5 = normal
 - 5-15 = mild
 - 15-30 = moderate
 - >30 severe

APGAR

	0	1	2
Appearance	Blue or pale	Pink body, blue extremities	Pink
Pulse	Absent	<100	>100
Grimace	No response	Grimace, or feeble cry	Cry or pull away when stimulated
Activity	None	Some flexion	Fixed arms & legs which resist extension
Respiration	None	Weak, irregular gasping	Strong cry

Canadian Angina Score

• Canadian scale I-IV:

- ▶ 1 = bothersome only - only during v strenuous/prolonged activity
- ▶ 2 = mild limitation - only during vigorous activity
- ▶ 3 = moderate limitation - symptoms everyday living
- ▶ 4 = total limitation - angina @rest/unable to perform any activity without angina

New York Heart Association Heart Failure

- NYHA 1 -4:
 - ▶ 1 = no limitation: cardiac disease but no limitation ie no SOB up stairs
 - ▶ 2 = mild SOB during normal activity
 - ▶ 3 = marked limitation: comfortable only at rest. Symptoms walking short distances
 - ▶ 4 = severe limitation: Symptoms at rest. Mostly bed bound

Lee's Revised Cardiac Index Risk

- Lee's criteria for periop CVS risk in non-cardiac surgery (3 day MACE risk):
 - ▶ high risk surgery (abdo, thoracic or suprainguinal vasc surgery)
 - ▶ Hx IHD
 - ▶ Hx stroke/TIA
 - ▶ Hx of heart failure
 - ▶ chronic renal impairment = creat >177
 - ▶ DM on insulin
- ↳ Risk of cardiac events periop based on number of factors:
 - 0 = 0.4%
 - 1 = 1%
 - 2 = 6%
 - ≥3 = 11%
- NB MACE = death, MI, cardiac arrest

AHA Perioperative Risk

Table 2 ACC/AHA clinical predictors of preoperative risk

Major
Unstable coronary syndromes (unstable angina/MI within 30 days)
Decompensated congestive cardiac failure
Significant arrhythmias
Severe valvular disease
Intermediate
Mild angina pectoris
Previous MI (>30 days earlier)
Compensated or previous congestive cardiac failure
Diabetes mellitus
Renal insufficiency
Minor
Advanced age (>70 yr)
Abnormal ECG
Non-sinus rhythm
History of stroke
Uncontrolled systemic hypertension

Metabolic Equivalents

- 1 MET = 3.5ml/kg/min O₂ consumption of 40yr old 70kg male
- Guide =
 - ▶ 1-4 = eating, dressing, walking around house
 - ▶ 4-10 = climbing flight of stairs, brief running, golf
 - ▶ >10 = strenuous sports

LV Impairment

- By Ejection fraction:

- ▶ 40-50% = mild,
- ▶ 30-40% = mod,
- ▶ <30% = severe

Hypertension

- grade on :
 - ▶ Level 1 – up to 160/100
 - ▶ Level 2 – up to 180/110
 - ▶ Level 3 – > 180/110
- evidence of end-organ damage?
 - ▶ IHD,
 - ▶ CVA,
 - ▶ renal dysfunction,
 - ▶ LVH,
 - ▶ heart failure

Levine Murmur Classification

[>3 suggest haemodynamic consequences]

- out of 6:
 - ▶ 1 = careful listening for sometime
 - ▶ 2 = faint but able to hear straight away
 - ▶ 3 = loud but no thrill
 - ▶ 4 = loud with thrill
 - ▶ 5 = (as 4) & can hear with rim of stethoscope
 - ▶ 6 = (as 4) & can hear without a stethoscope

Valvular Disease

Aortic Stenosis

Table 1 Grading of AS in adults. BSA, body surface area

	Normal	Mild	Moderate	Severe
Aortic jet velocity (m s^{-1})	<2	<3	3–4	>4
Peak gradient (mm Hg)	<10	<40	40–65	>65
Mean gradient (mm Hg)	<5	<25	25–40	>40
Valve area (cm^2)	3–4	>1.5	1.0–1.5	<1.0
Valve area indexed ($\text{cm}^2 \text{ m}^{-2}$ BSA)		>0.85	0.6–0.85	<0.6

Mitral Stenosis

- valve areas similar to AS (normal is a bit bigger) 4...2...1

	Norm	Mild	Mod	Severe
Mean Gradient		<5	5-10	>10
Valve Area cm ²	4-6	>1.5	1.5-1	<1
Peak Pressure		<30	30-50	>50

Aortic Regurgitation

- severity is assessed by ECHO & colour flow doppler:
 - apical 5CV (5th chamber = aortic root)
 - criteria for severe:
 - jet width >60% at cusp level
 - >7mm width
 - flow reversal in descending thoracic aorta

Mitral Regurgitation

- severity relates:
 - regurgitant fraction:
 - **severe** MR = regurg jet fills LA >8cm²
 - **mild** MR = regurg jet fills LA <4cm²
 - PAP
 - chronic significant MR = ↑ed PAP

Right Sided Valve Disease

- Severe Tricuspid stenosis = valve area <1cm²
- Severe tricuspid regurg:
 - vena contracta >0.7cm
 - Systolic flow reversal in hepatic veins
- Severe pulmon regurg:
 - colour jet fills outflow tract
- Severe pulmon stenosis:
 - Velocity >4m/s
 - peak gradient >60mmHg

Pulmonary Hypertension

(measured at rest)

	Mean	SBP	DBP
Mild	25-40	30-50	20-25
Mod	40-55	50-70	25-35
Severe	>55	70-110	35-45

Endocarditis

- Diagnosis by Duke criteria (2 major or 1 major 3 minor or 5 minor)
 - ↳ low sensitivity & cannot be used if culture -ve or if IE of foreign implant or R side of heart
- Major
 - Positive blood culture with typical organisms
 - Evidence of endocardial involvement with positive echocardiogram
- Minor
 - Predisposing factor: known cardiac lesion, recreational drugs injection
 - Fever >38
 - Evidence of embolism
 - Immunological problems: glomerulonephritis, osler's nodes
 - Positive blood culture (atypical)

Pulmonary Embolism

- Score severity:
 - Minor = <30% obstruction & no RV dysfunction:
 - non specific symptoms
 - anticoag
 - Moderate = 30-50% obstruction, normal bp BUT RV dysfunction
 - ↑HR, ↑RR, haemoptysis
 - thrombolysis
 - Massive = >50% obstruction with severe RV failure +/- haemodynamic collapse:
 - embolectomy or thrombolysis

ABCD2 Score

- = 2 day stroke risk
- Risk stratified on score:
 - Age >60
 - Bp >140/90
 - Clinical -
 - speech = 1 point
 - limb mm weakness = 2 point
 - Duration -
 - 10-60 min = 1 point
 - >60min = 2 point
 - Diabetes
- max 7 points :
 - 1-3 = 1% risk
 - 4-5 = 4% risk
 - 6-7 = 7% risk

CHADS VASC

- CHADS2 to calculate annual stroke risk:
 - heart failure = 1
 - HTN = 1
 - Age
 - 65-74 = 1
 - >75 = 2
 - DM
 - prior TIA/stroke = 2 points
 - female = 1
 - Vasc = any of: periph arterial disease, prev MI, aortic plaque = 1
- scores:
 - 0 = low risk ⇒ no anti-coat consider aspirin

- ▶ 1 = mod risk \Rightarrow aspirin/warf
- ▶ ≥ 2 = mod/high risk \Rightarrow warfarin or NOAC
- yearly incidence of stroke based on score:
 - ▶ 0 = 2%; 1 = 3%, 2 = 4%, 3 = 6%, 4 = 8.5%, 5 = 12.5%, 6 = 18%

HASBLED SCORE

- defines patient risk of bleeding
- HAS-BLED score = 1 point for each:
 - ▶ Hypertension
 - ▶ Abnormal liver or renal function
 - ▶ Stroke
 - ▶ Bleeding history
 - ▶ Labile INR
 - ▶ Elderly >65yrs
 - ▶ Drugs ie aspirin, NSAIDs, alcohol
- score
 - ▶ 0 = low risk
 - ▶ 1-2 = standard
 - ▶ ≥ 3 = high risk

Surgical Bleeding Risk

HIGH RISK

- major procedures involving airway, joints, head and neck and body cavities
- neurosurgery, orthopaedic, plastic and ophthalmological procedures
- must stop warf 5d prior to surgery
- don't re-start LMWH or warf until 48hrs post procedure if high risk of bleeding

LOW RISK

- =
 - ▶ minor dental procedure
 - ▶ superficial, skin and subcutaneous surgery
- can proceed with no change to oral anticoagulants

Child Pugh Score

Child-Pugh:

Mortality @ 1yr	< 5%	5-50%	>50%
Bilirubin(mol/L)	<25	25-40	>40
Albumin (g/L)	>35	30-35	<30
Ascities	none	moderate	marked
Nutrition	excellent	good	poor
INR	<1.7	1.7-2.3	>2.3
Encephalopathy	grade 0	1-2	3-4

Hepatic Encephalopathy

Box 7.1 Grades of hepatic encephalopathy

Grade 0	Alert and orientated
Grade I	Drowsy and orientated
Grade II	Drowsy and disorientated
Grade III	Rousable stupor, restlessness
Grade IV	Coma—unresponsive to deep pain

Roizen's Classification of Dyspnoea

Roizen's Classification of Dysnoea:

- 0 – walk @ normal pace on level ground
- I – walk as far as I like, provided I can take my time
- II – specific street block limitation
- III – around home only
- IV – breathless @ rest
- ↳ ≥grade 2 should prompt for further investigation

Asthma Severity

- mild (PEFR >80% predicted & min symptoms):
 - ▶ just continue routine meds
 - ▶ give short acting β agonist prior to surgery
- moderate (PEFR 50-80%):
 - ▶ add inhaled corticosteroid to routine β agonists 1/52 prior to op
- severe (<50% & >20% diurnal variation):
 - ▶ consider course of preoperative steroids (prednisone 40mg OD for 7/7)
 - ▶ resp physician review

GOLD Criteria for COPD

- All PFTs must have $FEV_1 < FVC < 0.7$ ie fix with obstructive problem:

	Severity	FEV1
Stage 1	Mild	>80%
Stage 2	Mod	50-80%
Stage 3	Severe	30-50%
Stage 4	Very Severe	<30%

ASA

- = physical status classification system for assessing fitness for surgery
- Does include current illness
 - ▶ 1 = health, no systemic disease
 - ▶ 2 = mild to mod systemic disease
 - ▶ 3 = severe systemic disease \Rightarrow functional limitation
 - ▶ 4 = severe systemic disease which constant threat to life
 - ▶ 5 = moribund no expected to survive +/- operation
 - ▶ 6 = DBD for harvesting
 - ▶ E = non elective cases

Wilson Score

- Used to predict difficult intubations
- Each factor subjectively scored 0-2 (normal \Rightarrow abnormal):
 - ▶ Weight

- ▶ Upper C spine AROM
 - ▶ Jaw movement
 - ▶ Receeding mandible
 - ▶ Protruding upper teeth
- $\geq 2 \approx 75\%$ difficult intubations (false positive 12%)

Brice Questionnaire

- 5 standard questions:
- ▶ Last thing remember prior to going to sleep
 - ▶ First thing remember when you woke up
 - ▶ Any dreams or experiences while you were sleeping
 - ▶ Worst thing about operation
 - ▶ Second worst thing about operation

Haemorrhagic Shock

- key is RR is earliest most sensitive sign

	% blood loss	RR	Pulse	SBP	Cap refill	Mental State
1	<15	14-20	90-100	Norm	Norm	Alert
2	15-30	20-30	100-120	Norm	>2sec	Anxious
3	30-40	30-40	>120	↓	>2sec	Drowsy
4	>40	>40	>120	↓↓	Undetectable	Confused

Dissections

- Stanford:
- ▶ A = arch & ascending
 - ▶ B = distal aorta to R brachio-cephalic
- De Bakey:
- ▶ I = arch & distal
 - ▶ II = confined to ascending aorta
 - ▶ III = originates in descending
- A & I & II = surgical management

Autonomic Neuropathy

- Postural drop SBP >20mmHg
- Variability of HR >10 during respiration cycle

WFNS Subarachnoid Haemorrhage

Table 16.2 World Federation of Neurosurgeons grading of subarachnoid haemorrhage

Grade	GCS (see ↻ p. 852)	Motor deficit
1	15	-
2	13-14	-
3	13-14	+
4	7-12	±
>5	3-6	±

Myasthenia Gravis

- Severity class:
 - ▶ 1 = eye symptoms only
 - ▶ 2 = eye + mild weakness of another muscle
 - ▶ 3 = eye + moderate weakness of another muscle
 - ▶ 4 = eye + severe weakness
 - ▶ 5 = intubation needed
- ↳ grade 2 - 4 have subcategories:
 - a = predominantly limb of axial muscles
 - b = bulbar or resp mm's
- Predictors of need for post op ventilation:
 - ▶ major body cavity surgery
 - ▶ duration of disease (> 6 years)
 - ▶ history of chronic respiratory disease
 - ▶ dose requirements of >750mg/day
 - ▶ preoperative VC of <3L

Burns Referral Criteria

SPAM

Size	Person	Area	Mechanism
>10% adult	PMH	Face/hands/perineum	Chemical/Electrical
>5% child	Pregnancy	Circumferential	Major Trauma
>5% full thickness	Extremes of age	Inhalational	NAI

Fluid Assessment in Paeds

SPEFM

Table 34.6 Clinical assessment of dehydration in paediatrics

Sign	5% dehydration	10% dehydration
Skin	Loss of turgor	Mottled, poor capillary return
Fontanelle	Depressed	Deeply depressed
Eyes	Sunken	Deeply sunken
Peripheral pulses	Normal	Tachycardia, weak pulse
Mental state	Lethargic	Unresponsive

Replacement volume (mL) = Weight (kg) × % loss, e.g. a 10% loss in a 5kg infant requires a replacement volume of 500ml
 56kg = 500g × 0.1 = 500ml

Table 34.7 Clinical assessment of hypovolaemia in paediatrics

Sign	Compensated	Uncompensated	Irreversible
HR	↑	↑↑	↑↓
Systolic BP	Normal/↑	Normal/↓	↑↓
Pulse volume	Normal/↓	↓	↓↓
Capillary refill	Normal/↑	↑	↑↑
Skin colour	Pale	Mottled	White/grey
Skin temperature	Cool	Cold	Cold
Mental status	Agitated	Lethargic	Unresponsive
Respiratory rate	Normal/↑	↑↑	Sighing
Fluid loss	<25%	25–40%	>40%