ITU Management of Subarachnoid Haemorrhage

Initial Targets:

**Pre-coiling:**
- SBP < 160 mmHg
- MAP < 110 mmHg
- Rx if glucose > 10 mmol/L
- pCO2 4.5 – 5 kPa
- Hb > 9
- Mg > 1.2 mmol/L

**Initial Mx:**
- Arterial +/- CVP line
- NGT ➔ early NG feed
- NG Nimodipine 60mg 4hrly
  ↓dose 30mg 2hrly if ↓BP
- 3L / 24hrs fluids (IV or NG)
  consider Fludrocortisone if neg. balance
- Consider Statin Rx

Ensure Continuous Neuro Monitoring:
- GCS (min. hourly neuro obs.), Pupils, ICP(via ICP bolt or EVD) + PbrO2 (via LiCOX or NIRS), TCD

Hydrocephalus
- Risk maximal day 1-4
- Confirm with CT (compare with initial scan) - ? Clot in 3rd / 4th ventricles
- May be communicating (slower onset) – option of serial therapeutic LPs
- Rx EVD – Document (& maintain) height above mastoid, hourly drainage volume & colour of CSF

Rebleed
- Maximal risk day 1-3, consider Tranexamic acid max 3 day course stop earlier if aneurysm secured
- Perform urgent CT
- Rx BP if > 160mmHg
d/w Neurosurgeons re: clot removal

Vasospasm
- Risk peaks day 2-7, reducing to normal by day 21
- Monitor clinically (best) or via PbrO2 trends (using NIRS or LiCOX)
- Diagnose clinically, CTA, CT perfusion scan, EEG (asymmetric α:δ ratio), Trans Cranial Doppler (FV > 200), PbrO2 (falling trend)
- Ensure normovolaemia using CO monitoring, hypertense with noradrenaline to target SBP 160 – 200mmHg depending on whether aneurysm treated, and on clinical response.
- If fails, check ECG +/- Echo, trial improving CO with dobutamine / milrinone & improving vasopressor response with steroids.
- If haemodynamic Rx fails consider endovascular Rx (balloon angioplasty / vasodilator infusion)

Hyponatraemia
- Can be due to multiple causes at same time (SiADH, Cerebral Salt Wasting, Addisons)
- Check clinical volaemic status, fluid balance, baseline cortisol and urinary Na.
- Aim to increase Na by no more than 12mmol / 24hrs
- SiADH – Eu / hypervolaemic : restrict free water but avoid dehydration, consider low dose hypertonic saline
- CSW – Hypovolaemic : use saline, consider fludrocortisone
- Pituitary Addisons – replacement hydrocortisone via infusion

If Evidence of Neurological Deterioration, Consider:

Non Convulsive Status
- Diagnose using EEG
- Consider Phenytoin / Keppra

Worsening Cerebral Oedema
- May warrant ICP bolt if GCS < 8 on initial presentation, if CT confirms ↑ICP
- Potential factors include:
  - Hyponatraemia, Ischaemia-reperfusion
  - Occult Sepsis – send CSF for MG&S, check CV lines, VAP, sinuses on CT
  - Cardiorespiratory failure – pts prone to ALI / ARDS esp. if require large volume resuscitation to maintain normovolaemia. Myocardial stunning post SAH assoc. with occult LVF