

2-5 Hypertension v.1

Hypertension is most commonly due to inappropriate depth of anaesthesia or inadequate analgesia. You should rapidly exclude a problem in adequate oxygen delivery, airway and breathing first.

START

1 Immediate actions

- Recheck blood pressure AND increase anaesthesia AND reduce stimulus.

2 Adequate oxygen delivery

- Check fresh gas flow for circuit in use AND check measured F_{iO_2} .
- Visual inspection of entire breathing system including valves and connections.
- Rapidly confirm reservoir bag moving OR ventilator bellows moving.

3 Airway

- Check position of airway device and listen for noise (including larynx and stomach).
- Check capnogram shape compatible with patent airway.
- Confirm airway device is patent (consider passing suction catheter).

4 Breathing - exclude hypoxia and hypercarbia as causes:

- Check chest symmetry, rate, breath sounds, SpO_2 , measured V_{Texp} , $ETCO_2$.
- Feel the airway pressure using reservoir bag and APL valve <3 breaths.

5 Circulation

- Check rate, rhythm, perfusion; increase frequency of BP check.
- Check cuff size and location, consider intra-arterial monitoring.

6 Depth

- Ensure adequate depth of anaesthesia and analgesia.

7 Consider underlying problem (Box B).

8 Call for help and consider temporising drug (Box C) if problem not resolving.

Box A: CRITICAL CHANGES

If problem worsens significantly or a new problem arises, call for help and go back to **START** of 1-1 Key Basic Plan.

BOX B: POTENTIAL UNDERLYING PROBLEMS

- Inadequate anaesthesia / analgesia (alfentanil can be diagnostic – see Box C for dose)
- Inadequate neuromuscular blockade
- Consider whether you could have made a drug error
- Omission of usual antihypertensives
- Distended bladder
- Vasopressor administered by surgeon
- Surgical tourniquet
- Excess fluid (over-administration / overload / TURP syndrome)
- Medical causes: drug interaction, renal failure, raised intracranial pressure, seizure, thyrotoxicosis, pheochromocytoma

BOX C: TEMPORISING DRUGS FOR HYPERTENSION

- Alfentanil $10 \mu\text{g.kg}^{-1}$ (adult 0.5-1 mg)
- Propofol 1mg.kg^{-1} (adult 50-100 mg)
- Labetolol 0.5mg.kg^{-1} (adult 25-50mg). Repeat when necessary.
- Esmolol 0.5mg.kg^{-1} (adult 25-50mg) Follow with infusion.
- Hydralazine 0.1mg.kg^{-1} (adult 5-10mg)
- Glyceryl trinitrate $0.5\text{-}5 \mu\text{g.kg.min}^{-1}$ infusion (adult $2\text{-}20 \text{ml.hr}^{-1}$ of 1mg.ml^{-1} solution)