

## 2-3 Increased airway pressure v.1

Using these steps from start to end should identify any cause of increased airway pressure in theatre.

Avoid spending excessive time and attention on one aspect until you have run through the whole guideline.

### START

#### 1 Adequate oxygen delivery

- Pause surgery if possible.
- Consider surgery related cause.
- Increase fresh gas flow AND give 100% oxygen 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.
- Confirm increased airway pressure by switching to hand ventilation (<3 breaths) (Box B).

#### 2 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).
- Isolate patient from anaesthetic machine and breathing system (Box C).
- If machine/breathing system problem excluded, consider whether airway device should be replaced or its type changed.

#### 3 Breathing

- Check chest symmetry, rate, breath sounds,  $SpO_2$ , measured  $VT_{exp}$ ,  $ETCO_2$ .
- Feel the airway pressure using reservoir bag and APL valve (Box B).
- Consider potential causes and actions (Box D).

#### 4 Circulation

- Check heart rate, rhythm, perfusion, recheck blood pressure.
- If circulation unstable, consider if it is due to high airway pressure gas trapping.

#### 5 Depth: Ensure adequate depth of anaesthesia and analgesia.

#### 6 If not resolving, call for help AND check arterial blood gas, 12-lead ECG, chest X-ray.

#### 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: FEEL THE AIRWAY PRESSURE

Remember that airway “feel” depends on your APL valve setting. You can only “feel” a maximum of what the APL valve is set to. Measured expired tidal volume gives additional information.

#### Box C: EXCLUDE ANAESTHETIC MACHINE/BREATHING SYSTEM PROBLEM

Ventilate lungs using self-inflating bag connected **DIRECTLY** to tracheal tube connector.

**DO NOT** use HME filter, angle piece or catheter mount.

- If increased pressure manually confirmed, re-connect machine
- If problem resolved, assume problem with machine, circuit, HME, filter, angle piece or catheter mount: check and replace.

#### BOX D: POTENTIAL CAUSES AND ACTIONS

- Inadequate neuromuscular blockade.
- If laparoscopic surgery, consider releasing pneumoperitoneum and levelling patient position.
- Consider potential causes:
  - Laryngospasm and stridor → 3-6
  - Bronchospasm → 3-4
  - Anaphylaxis → 3-1
  - Circulatory embolus → 3-5
  - Aspiration, pulmonary oedema; bronchial intubation; foreign body; pneumothorax.
- Consider potential actions: tracheal/bronchial suction; bronchodilator; PEEP; diuretic; bronchoscopy.