|  |
| --- |
| 2-2 Hypoxia / desaturation / cyanosis v.1 |
| Using these steps from start to end should identify any cause of unexpected hypoxia in theatre.Avoid spending excessive time and attention on one aspect until you have run through the whole drill. |

 START.

❶ **Adequate oxygen delivery**

* Pause surgery if possible.
* Increase fresh gas flow AND give 100% oxygen AND check measured FiO2.
* Visual inspection of entire breathing system including valves and connections.
* Rapidly confirm reservoir bag moving OR ventilator bellows moving.
* If SpO2 low, is it accurate? Consider whether poor perfusion could be the problem.

❷ **Airway**

* Check position of airway device and listen for noise (including over 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 B).
* Once machine/breathing system problem excluded, consider whether airway device should be replaced or its type changed.

❸ **Breathing**

* Check chest symmetry, rate, breath sounds, SpO2, measured VTexp, ETCO2.
* Feel the airway pressure using reservoir bag and APL valve (Box C) <3 breaths.
* Consider potential causes and actions (Box D).
* Consider muscle relaxation to optimise ventilation.

❹ **Circulation**

* Check heart rate, rhythm, perfusion, recheck blood pressure.
* If circulation unstable, consider if this is secondary to hypoxia.

❺ **Depth**

* Ensure adequate depth of anaesthesia and analgesia.

❻ 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 to START of GUIDELINE 1-1 Key basic plan. |

|  |
| --- |
| Box B: ISOLATE EQUIPMENT |
| Ventilate using self-inflating bag connected DIRECTLY to tracheal tube connector. DO NOT use HME filter, angle piece or catheter mount:* If problem resolves: assume problem with machine, circuit, HME, filter, angle piece or catheter mount: check and replace.
* If increased pressure manually confirmed: re-connect machine.
 |

|  |
| --- |
| Box C: 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 D: POTENTIAL CAUSES AND ACTIONS |
| * Hypoxia with increased airway pressure → 2-3
* Inadequate movement or expired volume: assist/increase ventilation.
* Asymmetrical chest expansion: exclude bronchial intubation/foreign body/pneumothorax.
* Consider potential actions: tracheal/bronchial suction; bronchodilator; PEEP; diuretic; bronchoscopy.
* Consider potential causes:
	+ Laryngospasm and stridor → 3-6
	+ Bronchospasm → 3-4
	+ Anaphylaxis → 3-1
	+ Circulatory embolism → 3-5
	+ Cardiac ischaemia (or infarction) → 3-12
	+ Cardiac tamponade → 3-9
	+ Sepsis → 3-14
	+ Malignant hyperthermia crisis → 3-8
	+ Aspiration, pulmonary oedema, congenital heart disease
 |

The Association of Anaesthetists of Great Britain & Ireland 2018**. www.aagbi.org/qrh** Subject to Creative Commons license CC BY-NC-SA 4.0. You may distribute original version or adapt for yourself and distribute with acknowledgement of source. You may not use for commercial purposes. Visit website for details. The guidelines in this handbook are not intended to be standards of medical care. The ultimate judgement with regard to a particular clinical procedure or treatment plan must be made by the clinician in the light of the clinical data presented and the diagnostic and treatment options available.

2-2