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| 3-4 Bronchospasm v.2 |
| Signs and symptoms include: expiratory wheeze, prolonged expiration, increased inflation pressures, desaturation, hypercapnia, upsloping capnograph trace, silent chest.Can occur alone or as part of another problem. |

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| Box A: ACTIONS IF AIRWAY SOILING/ASPIRATION |
| Consider tracheal intubation and tracheal toiletUse nasogastric tube to aspirate gastric contentsChest X-rayConsider post op level of care and follow-up |

 START.

❶ Call for help and inform theatre team of problem.

❷ Give 100% oxygen.

❸ Stop surgery / other stimulation.

❹ Fully expose the chest and perform a rapid systematic examination:

* Inspect, percuss, palpate, auscultate.
* Absence of wheeze may indicate severe bronchospasm with no air movement.

❺ Deepen anaesthesia:

* Bronchospasm may be a consequence of light anaesthesia.
* Inhalational anaesthetic agents are bronchodilators.
* Avoid isoflurane or desflurane if possible – airway irritant if increased rapidly.

❻ Exclude malpositioned or obstructed tracheal tube or supraglottic airway

* Consider whether there could be endobronchial or oesophageal intubation.

❼ If anaphylaxis suspected **→ 3-1**

❽ If airway soiling/aspiration suspected airway see Box A.

**❾** Treat bronchospasm (Box B). First line is salbutamol by metered dose inhaler or by nebuliser; i.v. route is second line. Other drugs at clinician discretion.

❿ Consider alternate diagnoses causing or mimicking bronchospasm (Box C).

⓫ Use appropriate ventilation strategy (Box D).

⓬ If raised airway pressure and/or desaturation persists, consider **→ 2-2 Hypoxia/ desaturation/cyanosis.**

⓭ Obtain a chest X-ray as soon as clinically safe to do so.

⓮ Plan appropriate placement for post-procedure care.

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| Box B: DRUG DOSES |
| Salbutamol IpratropiumAdrenalineMagnesiumKetamineAminophyllineHydrocortisone | Nebuliser: Child <5 yr, 2.5 mg; Adult and >5 yr 5 mg i.v. bolus: Adult 250 µg diluted, slowly; Child 1-23 months 5 µg.kg-1 once over 5 mins; Child 2-17 years 15 µg.kg-1 once over 5 mins (max. 250 µg)Adult i.v. infusion: 5-20 µg.min-1 Child i.v. infusion: 0.5-1 µg.kg-1.min-1 (max.20 µg.min-1)Neb: 2-12 yr 0.25 mg; Adult 0.5 mgNeb: Child 0.5 ml of 1:1000 Neb: Adult 5 ml of 1:1000 i.m.: <6 mo 50 µg; <6 yr 120 µg; <12 yr 250 µg; Adult 500 µgSlow i.v. bolus: 0.1 - 1 µg.kg-1 (Adult 10-100 µg) i.v. over 20 min: 50 mg.kg-1 (Adult 2 g)Bolus: Adult 20 mgi.v. Infusion: 1-3 mg.kg-1.hr-1i.v. over 20 min: 5 mg.kg-1 (omit if already on theophylline)i.v. infusion:<9 yr 1 mg.kg-1.hr-1; <16 yr 0.8 mg.kg-1.h-1; Adult 0.5 mg.kg-1.h-14 mg.kg-1 (Adult 200 mg) |

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| Box C: ALTERNATES and MIMICS |
| Wheeze: pulmonary oedema; misplaced airway device; ARDS; laryngospasmRaised airway pressure: obstruction of larynx, trachea or bronchi; obstruction of breathing system (any part); decreased lung compliance; pneumothorax |

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| Box D: VENTILATION STRATEGIES |
| Increase expiratory time to allow complete expirationPressure control ventilation may be betterBe alert to ‘breath stacking’Permissive hypercapnia may be appropriate |

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