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| 3-9 Cardiac tamponade v.1 |
| Caused by an accumulation of blood, pus, effusion fluid or air.  Most commonly seen in context of cardiothoracic surgery, trauma or iatrogenic causes, e.g. central line placement. |

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| Box A: DIAGNOSTIC FEATURES |
| * ULTRASOUND DIAGNOSIS IS THE PREFERRED TECHNIQUE * Unexplained dyspnoea/tachypnoea and agitation if conscious * At least one of ‘Beck’s Triad’:   + Jugular venous distension   + Muffled heart sounds   + Hypotension * Other signs: Pulsus paradoxus; ECG → low voltage QRS / electrical alternans / pulseless electrical activity; chest X-ray → enlarged cardiac silhouette |

START.

❶ Call for help and inform clinical team of problem. Note the time.

❷ If indicated, start CPR immediately.

❸ Give 100% oxygen, ventilate and exclude tension pneumothorax:

* Maintain the airway and, if necessary, secure it with tracheal tube

❹ Rapid diagnosis and rapid drainage are vital, so:

* Call for ultrasound machine.
* Call for pericardiocentesis kit (eg 18G Luer spinal needle + 3-way tap + 20 ml syringe or a purpose made kit).
* Call for cardiac arrest trolley.
* Diagnostic features are shown in Box A.

❺ Consider whether there is time to wait for someone with expertise in pericaridiocentesis, or whether thoracotomy is a better treatment option.

❻ Consider the following temporising measures:

* Fluid bolus (Adult: 500 - 1000 ml, Child: 20 ml.kg-1) .
* Inotropic drugs.
* Low tidal volume, low/no PEEP ventilation strategy.

❼ If clinically indicated, perform pericardiocentesis (Box B).

❽ After pericardiocentesis, re-assess using ultrasound examination and vital signs.

❾ Reassess continually in case tamponade recurs.

❿ Plan definitive management of underlying cause, including specialist referral.

⓫ Plan transfer of the patient to an appropriate critical care area.

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| Box B: EMERGENCY PERICARDIOCENTESIS (sub-xiphoid approach) |
| ULTRASOUND GUIDANCE IS THE PREFERRED TECHNIQUE  WARNING: Myocardial rupture, aortic dissection and severe bleeding disorder are *relative* contraindications.  • Identify tip of xiphoid  • Prep and drape overlying skin  • Infiltrate local anaesthetic (if necessary and if time)  • Ideally use ultrasound to identify pericardial fluid  • Insert pericardiocentesis needle immediately to left of tip of xiphoid  • Attach 3-way tap and 20 ml syringe  • Direct needle generally toward left shoulder but using ultrasound to direct needle toward the largest pericardial collection  • Aspirate and drain – aspiration of a small volume may cause a dramatic clinical improvement |

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| Box C: CRITICAL CHANGES |
| Cardiac arrest → 1-A |

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