Paediatric chest injury

General features:

- **Children have elastic chest walls: they can have massive visceral injuries without rib fractures**
- **If there ARE rib fractures, it indicates extremely high energies**
- **High metabolic rate, small functional residual capacity, thus they desaturate quickly**
- **Flail chest is poorly tolerated because the ribs are more horizontal**

During the primary survery, you should pick up:

- **Tension pneumothorax**
- **Massive hemothorax**
- **Open pneumothorax**
- **Flail chest –** but paradoxical chest movement is less likely to be seen in children because severe pain on breathing will cause the child to splint their chest wall
  - Flail chest requires 2 weeks before it becomes stable
- **Cardiac tamponade**- B**ecks triad; muffled heart sounds, distended neck veins, and shock.**

Later on, you may discover:

- **Pulmonary contusion**
  - Oedema and interstitial/alveolar haemorrhage
  - Because the chest wall is so elastic, there is force transmitted directly to the lung
  - Oxygen and physiotherapy
  - It improves in 36 hrs
- **Tracheal or bronchial rupture**
  - The clue is a persisting air leak through your chest drain
  - There may be subcutaneous emphysema
  - You may need more than one chest drain
  - Your pressure support should be limited so as to allow a small leak to close on its own
- **Disruption of the greater vessels**
  - If they survive to get to hospital, the tear in the aorta has tamponaded itself within an intact adventitial layer (outermost layer)
  - The commonest site of rupture is at the ligamentum arteriosum, close to the origin of the left subclavian artery
  - They will be shocked and their pulses barely palpable
  - THERE WILL BE A WIDENED MEDIASTINUM
  - Avoid blood pressure fluctuations
- **Diaphragm rupture**
  - More common on the left
  - More common with penetrating chest injury