



# Critical Care Intra-Aortic Balloon Pump Guidelines

## Critical Care Guidelines FOR CRITICAL CARE USE ONLY

### Set-up

Ensure post-insertion ECG, CXR, limb circulation check completed and reviewed

Ensure:

- Power on
- Helium tank open and sufficiently full
- Tubing check – connections tight and tubing patent
- Pressure bag – inflated and transducer zeroed
- Monitoring – ECG, arterial pressure, balloon pressure

Initial settings:

- Mode - Auto
- Frequency - 1:1
- Augmentation – Max
- Trigger - ECG

### Monitoring

Bedside chart should be completed for every patient

Avoid having pump on standby - risk of clot formation after 10minutes

**If the balloon remains on standby for more than 20minutes it should be removed**

Continuous monitoring:

- ECG
- Arterial trace
- Balloon pressure waveform
- Tubing patency
- Patient – insertion site, alignment of affected limb

Hourly checks:

- MAP (from IABP monitor)
- Augmented diastolic pressure (from IABP monitor) frequency
- trigger (should be ECG when available)
- increasing inotrope requirements
- bilateral pedal pulse and foot colour/warmth
- left radial pulse and hand colour/warmth

Daily checks:

- platelets and U+Es
- ECG
- CXR
- Consider iv heparinisation

### Weaning

Consider when stable MAP>65, stable heart rate and rhythm, CI >2.2 (if measured)

Process:

- frequency decreased from 1:1 to 1:2 then 1:4
- medical review before and following each reduction
- augmentation of the balloon should not be altered**

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| Title: Lothian Critical Care Intra-Aortic Balloon Pump Guideline |  |
|  | Authors: A Abu-Arafeh G McNeill        |
| Status Draft/Final: Final  | Approved by: CC QIT, F Perks Radiology |
|  | Written: August 2018                   |
| Reviewed on: Sept 2021   | Next review : August 2024              |

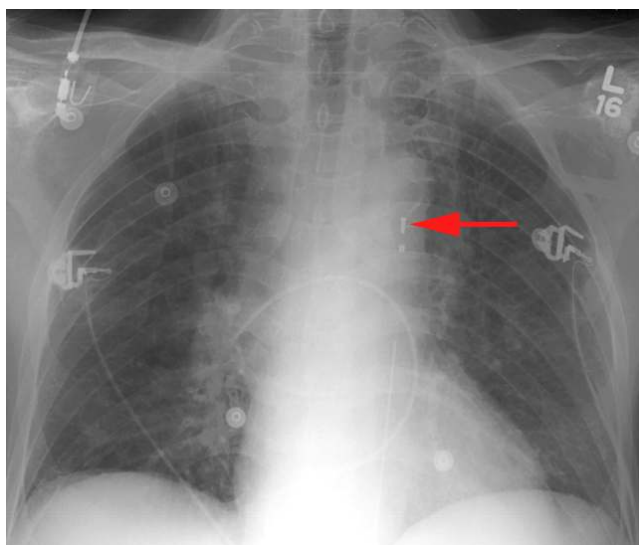
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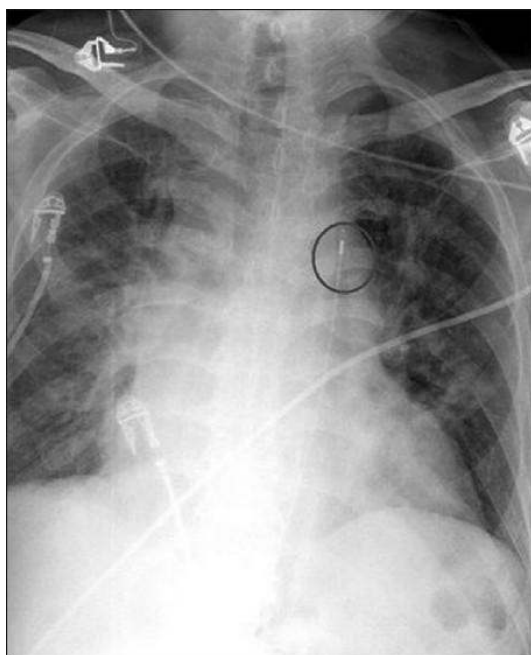
### Reviewing the CXR

Positioning of the balloon tip is important as too proximal a placement risks occlusion of the left subclavian artery while too distal a placement risks renal artery occlusion.

The tip of the balloon pump can be identified on CXR as a small linear metallic marker. During inflation of the balloon, an air filled structure within the descending thoracic aorta may also be visible.



Traditionally the aortic knuckle is used as a CXR landmark, with optimal positioning being 2-4cm below the upper point of the aortic knuckle.



In cardiac failure this is often not easily seen. A position 2cm superior to the carina can also be used to ensure correct position of the balloon tip.

If you have any concerns, please ask a senior colleague to review.

**A formal radiology report MUST be obtained and reviewed.**

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### Troubleshooting

#### Potential contra-indications to IABP therapy

- Severe aortic regurgitation
- Abdominal or thoracic aortic aneurysm or dissection
- Severe aortic calcification or peripheral vascular disease
- Uncontrolled bleeding disorder or uncontrolled sepsis

#### Loss of trigger

- check ECG trace and replace ECG electrodes or cable if required
- try alternative ECG lead
- ensure pressure waveform visible and arterial line patent
- check pressure bag inflated and transducer height appropriate

#### Blood seen in balloon tubing

- STOP pump
- clamp helium line and disconnect balloon tubing from pump
- notify medical team immediately

#### Increasing inotrope requirements

- do not stop pump
- if no obvious cause (e.g. increased sedation) then notify medical team
- if increased 2 consecutive hours then notify medical team

#### Absent pulse or abnormal limb colour/warmth

- do not stop pump
- notify medical team immediately

#### New or sudden onset limb/shoulder pain

- do not stop pump
- notify medical team immediately
- assess limb pulses, colour, temperature

#### Low helium message or helium tank noted to be low

- no need to stop pump
- pump may need to be restarted if alarm has caused it to pause
- close helium cylinder fully, remove cylinder, check plastic washer is present and not damaged, install new cylinder and slowly open valve

#### Cardiac arrest

- it is safe to perform DC cardioversion if staff are clear of patient and IABP
- select arterial trigger to continue pump counter-pulsation with CPR effort
- if CPR is not triggering pump then the balloon pump should be switched off and manual inflation considered
  - *this involves manually injecting 50ml of air into the balloon and immediately deflating it 5 times every 30minutes. It should only be attempted by staff trained to do so. **If the balloon remains deflated for more than 20minutes – it should be removed***

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