

# Watch Out for...

## Removal of Central Lines

Watch Out Notice: 17

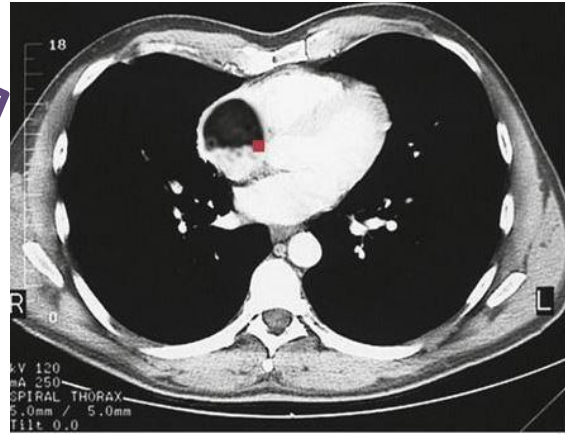
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### What Happened?

- A patient died soon and unexpectedly after his jugular central venous cannula (CVC) was removed, whilst in the sitting position
- An investigation occurred as there were concerns that an air embolus might have contributed to his death
- In fact the cause of cardiac arrest at PM was severe atheromatous disease, but there are still learning points surrounding CVC removal



(illustrative air embolus – not actual patient image)

### The Facts:

- Removal of CVC is potentially hazardous, including risks of bleeding, introducing infection and entrainment of an air embolism into the venous circulation.
- CVC and the tract through which they enter the vein can allow air to be sucked into the vessel due to changes in intrathoracic pressure with breathing. The air enters the right side of the heart and then the pulmonary vasculature.
- If enough air is entrained, this can rapidly lead to cardiovascular collapse.

### Protect Your Patients:

- Whenever a CVC is removed the patient must be lying flat, or ideally head down (except with femoral CVC) with the **heart above the level of the cannula**.
- If possible, ask the patient to hold their breath or ideally to perform Valsalva's manoeuvre to raise central venous pressures. Never remove a CVC when the patient is breathing in or coughing.
- After rapid, smooth removal of the CVC, quickly apply an occlusive dressing to the wound. This can include a blob of paraffin, to prevent air entrainment after removal. Apply pressure for 5-10 mins to minimise bleeding.
- If air embolism is suspected, immediately turn the patient onto their left hand side, apply 15L oxygen and call for senior medical assistance.



**Valsalva's Manoeuvre**