

Air Embolism Safety Alert

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The Faculty of Intensive Care Medicine and the Intensive Care Society wish to draw its members' attention to a recent Coroner's report we received which reviewed the events surrounding an avoidable death of a patient from an air embolism.

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The patient had an elective abdominal aortic aneurysm repair and was transferred to the intensive care unit (ICU), intubated and ventilated, for ongoing post-operative care. He had a large bore intravenous catheter in place, described as a 'trauma line', which had an intravenous infusion running through it via a three-way tap. Soon after arriving in the ICU, the infusion line was disconnected, and the three-way tap was capped with a white bung. It was noted at this time there was no clamp on the trauma line. Approximately 2 hours later, the patient went into cardiac arrest, following a rapid fall in the ETCO₂ trace. During CPR, it was noted that the three-way tap of the trauma line was open to air. It was unclear when this had happened. The patient was successfully resuscitated but later died of a hypoxic brain injury.

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The Coroner determined that the cause of cardiac arrest was most likely secondary to air embolism as a result of the three-way tap on the trauma line being open to, and entraining, air. A Regulation 28 Report to Prevent Future Deaths issued by the coroner highlighted matters of concern regarding central venous catheters (CVCs) and the risk of air embolism.

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In order to prevent future deaths from air embolism associated with central lines, it is recommended that ICUs, High Dependency Units (HDUs) and other clinical areas caring for patients with CVCs ensure that any unused taps attached to CVCs are closed to air **and** capped off with an appropriate device. (Note that central lines may have non-occlusive caps pre-attached to facilitate sterilisation that must be removed and replaced with occlusive caps). Units should consider how this action is recorded.

All CVCs should also have clamps associated with each lumen of the line, and these should be used to clamp closed any lumens that are not in use as an additional safety measure.

The Joint Standards Committee of the Faculty of Intensive Care Medicine and Intensive Care Society is currently developing national guidelines on the detection, referral and treatment of air embolism. In the meantime, individual trusts and health boards should ensure they have appropriate systems in place to prevent harm from incidences of air entrainment through CVCs.