

PATIENT SAFETY WATCH



EDITION 2/12: Central Venous Access Device (CVAD) Removal

WHAT SHOULD YOU DO

Ensure LHD and facility policies and procedures, and individual clinical practice, complies with the requirements of *Central Venous Access Device Insertion and Post Insertion Care* (PD 2011_060):

- CVADS are always removed by trained or supervised clinicians using aseptic technique.
- The patient is positioned supine with head slightly down (if tolerated).
- Following removal, the site is sealed with an airtight dressing which remains insitu for +24 hrs.
- Patients remain in supine position (or Semi-Fowlers) for 30 - 60 minutes after removal. At least one set of observations is performed during this period, as well as immediately prior to retrieving the patient to the upright position. Routine observations are ongoing.
- Ensure catheter tip is intact on removal and send for culture, and perform blood cultures, if infection is suspected. Those actions are recorded

CASE 1

THE INCIDENT

A 65 YEAR OLD MAN had been an inpatient with complicated pancreatitis resulting in a partial pancreatectomy. He had a central venous access device in place. It was noted during the intensivist's routine rounds that the central line site appeared inflamed. He directed staff to remove the CVAD and to send the tip and a swab of the site for bacterial culture. Not long after the round, a physiotherapist assisted the patient with mobilising and sitting out in a recliner chair.

Nursing staff prepared to remove the CVAD and equipment was set up prior to laying the patient flat in the recliner. The patient then held his breath and the line was removed quickly with light pressure applied with gauze, and the removed CVAD was held over the

sterile field so that the tip could be cut off by a second nurse. There was a delay in this occurring as a sterile jar had to be obtained. The piece of gauze was taped down. This was difficult because the patient was sweaty. He was then sat up in the recliner.

Within minutes of sitting up, the patient became short of breath, grey and his oxygen saturations dropped to 40%. A bag valve and mask was applied with high flow oxygen and he was laid flat. His oxygen saturations improved to 96%.

Approximately 15 minutes after the first episode, the patient deteriorated again. A chest X ray and ECG did not clarify the cause of collapse and an urgent echo was

requested. The provisional diagnosis was an air embolus. The echocardiogram revealed multiple air bubbles in the left ventricle and left atrium. Arrangements were made to transfer the patient to a tertiary facility for hyperbaric treatment.

On this occasion, when the catheter was removed, the ongoing pressure applied to the site was not sufficient to occlude the tract to prevent the entry of air into the vasculature. The site was then dressed with a piece of gauze and tape which did not seal the opening. The ability to apply sufficient pressure was hampered by the ergonomics of the patient lying in a recliner and the clinician stretching out to place the catheter over the sterile field. The hospital procedure does not state where the patient should be located to have the CVAD removed.

CASE 2

THE INCIDENT

The **PATIENT'S FEMORAL VEIN CVAD** was removed by the casual Registered Nurse (RN) caring for the patient. Pressure was applied to the site for approximately 15 minutes due to persistent bleeding. The patient requested to be returned to bed due to "feeling restricted in the groin" after moving. The patient complained of a headache, pain in the groin and stated she was not feeling well. A BP of 85/55 mmHg was recorded. The patient was administered a total of 1200mls of intravenous fluid and was provided with analgesics. The plan included monitoring the patient's haemoglobin and perfusion in the right leg, withholding warfarin and Enoxaparin and ensuring deep vein thrombosis prophylaxis was maintained with the use of stockings and an intermittent compression device. Over the next few days, the patient also received a number of units of packed red cells as her

haemoglobin dropped to 85g/L. Several days later she had a thrombotic stroke from which she subsequently died.

Interviews revealed that the patient was seated in a reclining chair when the CVAD was removed. The casual staff member had performed the procedure under supervision several times previously at another facility. During these procedures there had been no reference to the need to place a patient in the supine position. The LHD procedure specifies that "a Registered Nurse who is deemed independent in a competency based assessment or can demonstrate recognition of prior learning" may undertake the removal of Central Venous Catheters. A competency based assessment of this staff member had not occurred. The team identified that the activity and skill mix in the HDU the day the CVAD was removed contributed to the reduced ability of core HDU staff to supervise the casual nursing staff. The HDU normally has four staff on a weekend day shift. On the day of removal there were only two core HDU staff present. The in-charge nurse was required to take a patient load due to the decreased skill mix. The in-charge nurse felt pressured as the following two shifts were short staffed. The in-charge nurse was of the belief that the casual nurse had worked extensively in the ICU and ED and would not require constant supervision.

The team identified that After Hours Nurse Managers who are responsible for the allocation of staff to wards to cover shortfalls are not aware of the competencies of individual staff members. There is no document for them to refer to that provides this information. The reduced skill mix in the HDU combined with the fact that the in-charge nurse was attempting to source staff led to a lack of supervision which contributed to the incorrect method of removal of the central venous catheter.