Percutaneous Central Venous Access Device Insertion Checklist – Adult

The Percutaneous Central Venous Access Device (CVAD) Insertion Checklist - Adult was developed by the Statewide Anaesthesia and Perioperative Care Clinical Network (SWAPNet), Safe Central Venous Access Working Group to support clinicians in central venous access device insertion and improve outcomes for patients. The checklist deliberately focuses on percutaneous CVADs in adult patients and can be applied to CVC, PICC, haemodialysis catheter and sheath introducer insertion.

The checklist has been designed to be used as the full documentation of insertion. Utilisation is not mandatory. It is beyond the scope of the checklist to recommend how CVADs are repositioned. Individual practitioners ultimately choose whichever tip location they feel is most approprite and undertake a risk/benefit assessment before proceeding. Additional note sections have been added to the checklist for more specific information if required.

BACKGROUND

Insertion of a CVAD is a common hospital procedure with over 14,000 devices inserted in Queensland Health facilities every year[14]. Indications for CVADs include:

- Administration of infusion therapies and highly irritant and vesicant medications
- Reliable access for critically unwell
- Urgent access for life saving measures
- Multiple/ high frequency incompatible infusates
- Central venous pressure monitoring
- High flow rate infusions
- Haemodialysis / apheresis
- Frequent blood sampling

Despite being a common procedure it is not one without significant risks including risks associated with insertion of the devices and those associated with having a CVAD in situ either short or long term. These risks can include infection, malposition, extravasation, haemo/pneumothorax, thrombosis, vascular injury and air embolus. Although the complication profile for these devices is not fully defined, incident reporting has brought to light several instances where patient harm has resulted from technical aspects of CVADs insertion and/or maintenance.

Although numerous guidelines exist for CVAD management, they tend to focus on prevention of catheter related infections with minimal attention to the technical aspects of insertion or device selection and characteristics. This checklist document has been developed to complement existing guidelines.

SPECIFIC CONSIDERATIONS

Insertion

Confirmation of venous placement

Identifying venous placement prior to dilating to reduce the rate of arterial dilation is recommended[3,5,9].

Device length, trimmed length if applicable and external measurement are required to establish a baseline for post insertion care including recognition of malposition (incidental dislodgment or advancement) and removal (total length required to identify catheter emboli due to catheter rupture).

Recommendations on internal length for CVAD insertion are offered to achieve optimal tip placement[6]. The intention is to reduce the risk of thrombosis and extravasation.

Securement

Identification of chosen securement device, dressing and antimicrobial/antiseptic disc or dressing used. Recommendations are applied for minimum suture size and securement to hub to reduce post insertion incidental dislodgment[3,5].

Number of attempts

Insertion difficulty[15] (including number of attempts) is included as a deviation from a standard CVAD insertion. Documentation of failed insertion attempts facilitates handover and shared clinical monitoring for delayed complications (e.g. haemorrhage, haemo/pneumothorax). Additionally, it provides subsequent proceduralists additional information that may assist the avoidance of repeated failed attempts (e.g. avoid particular vein due to abnormality).

CVAD tip position

Evidence based recommendations combined with expert opinion[15] are applied to provide proceduralists and staff managing the device post insertion with a guide on tip position and risks associated with sub-optimal locations [3,4,5,10,13]. Most published literature refers specifically to PICC lines or other devices with relatively long dwell times. This literature has been reviewed and adapted to also guide CVAD that would typically be used for shorter time periods, including intra-operatively.

RISKMAN SURVIELLANCE

RiskMan enables Hospital and Health Services and the Department of Health to collect, integrate, manage and report on:

- Incidents: clinical and non-clinical (staff, hazards, equipment)
- Case management (staff rehabilitation)
- Consumer/staff feedback.

The Safe Central Venous Access Project included revision of RiskMan issues pertaining to central venous access to support consistency in data collection.

INTEGRATED ELECTRONIC MEDICAL RECORD

The ieMR delivers an integrated suite of digital health care services that improve safety, efficiency and quality in clinical workflow processes. Establishment of the Safe Central Venous Access Working Group included digital representation to facilitate duplication across the system. As well as offering a convenient and thorough clinical documentation tool in non-ieMR hospitals, the checklist may be used as a digital downtime form. It has been designed to harmonize with SA Anaesthesia and Metavision.

The finalised design of the CVAD Insertion Checklist will be utilised to guide updates to the current CVAD documentation that is available within the digital platform. This will create continuity of documentation within the ieMR to ensure safe insertion of CVAD occurs in the different hospital settings.

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