



CENTRAL LINE CARE

JEENA VIJAYAN P V, SELMAR MELLISHA E
Nursing tutors, College of Nursing , AIIMS Nagpur, India

Induction training programme

Employees will get new informations from induction training programme. It welcomes new employees and helps for transition in to the new roles, and help them to adjust with the new environment. It helps to retain the employee by helping them to understanding their role. It will automatically increases the productivity of the organization. It mainly explain the work line policies ,job descriptions and expected outcomes from the employee. Also it ensure the safety of the employee by proving all aspects of datas related to organization. So as a whole its beneficial for both employer and employee.

Introduction

Central line (central venous catheter, CVC, central venous line or central venous access catheter)

It is defined as a vascular infusion device that terminates at or close to the heart or in one of the great vessels. It is used in inpatient and outpatient clinical settings to provide long-term venous access for patients with a wide variety of illnesses and conditions. Central venous catheter (CVC) is a catheter or a long, thin, flexible tube ,placed into a large vein in the neck (internal jugular vein), chest (subclavian vein or axillary vein, or groin (femoral vein), usually CVCs are kept for 21 days or more especially when the reason for their use is longstanding.

Aubaniac (1952) is the person who reported the use of central line catheterization. Now we are using it widely especially in high -dependency unit. Around 48% of the patients in intensive care units have a central line, accounting for 15 million central line-days per year.

Central line insertion is a sterile invasive procedure ,so itself act as a port for entry of micro organisms, especially staphylococcus aureus and coagulase-negative Staphylococci. The amin usage of central lines are for admistering drugs, for parenteral nutritional support, sample collections and monitoring of CVP.

Anatomy and physiology

Mainly internal jugular vein, femoral vein and subclavian veins are using for central line insertion. Ultrasound guidance can benefit all approaches and is recommended for every CVC placement. However, when ultrasound guidance is not feasible, CVCs may be placed using anatomical landmarks without ultrasound. Femoral vein is having more risk of infection when compare to subclavian and jugular vein.

Indication

- Parenteral nutrition (TPN) for chronically ill patients.
- Peripheral line are impossible to get.
- Reduce the phlebitis in peripheral vein by the administration of intra- vasation drugs.
- Plasmapheresis
- Peripheral blood stem cell collections
- Dialysis
- Frequent blood sample collections
- To assess CVP

Contraindications

- Uncooperative patient.
- Distortion of anatomic landmarks from any reason
- Severe coagulopathy; INR 1.5-1.6; platelets<50K (relative contraindication).
- Bleeding disorder
- Infection over insertion site.
- SVC syndrome.
- Morbid obesity
- Planned mastectomy on the side of subclavian insertion.

The Relative contraindications include

- Positive end-expiratory pressure (PEEP) mechanical ventilation
- Only one functioning lung.
- Chances of pneumothorax

Selection of insertion sites

Three sites are frequently used for inserting the CVC:

1. The subclavian vein
2. The internal and external jugular vein
3. The femoral vein

Types of central line catheters

- **PICC LINE**- Its known as peripherally inserted catheters, is a central venous catheter inserted in to vein of the extremities .It is mainly for the duration of weeks to months, maximum up to one year. The tip of the PICC line rest in the superior venacava at the junction of right atrium.
- **Tunnelled catheter**- This type of catheter is surgically inserted into a vein in the neck or chest and passed under the skin. Only the end of the catheter is brought through the skin through which medicines can be given. It mainly used for months to years., The tip of the catheter is placed at the junction of the superior venacava and the right atrium. It helps for patient moving freely and less visible outside.
- **Non-tunnelled catheters** – Non tunnelled centrally inserted central catheters (CICCs) are placed percutaneously with the catheter exiting the skin in the vicinity of the venous cannulation site (jugular,

subclavian, femoral). Its mainly for temporary purpose (only days to 3 week). These catheters are most commonly used for temporary venous access. The tip of the catheter is placed at the junction of the superior venacava and the right atrium .

Depending on its use, the catheter is mono luminal (single lumen), biluminal (double lumen) or triluminal (triple lumen). Some catheters may even have 4 or 5 lumens, depending on the reason for their use.

The Central Line Bundle.

The central line care bundle consists of the cares that we have to follow for a central line patient.

It mainly having 4 componenets.

- Daily aseptic central line care during handling.
 - Hand hygiene
 - Hub decontamination by alcohol
 - Chlorhexidine 2 % for dressing changes
- Any local signs of infection
- Dressing changed
- Assessment to readiness of removal-documented

Daily assessment of these components are very much important in central line care bundle. Each day the nursing personal should record the all aspect of the same. Each central line maximum we can keep for 21 days. While removing the central line also we have to inspect the site and send for central line tip culture.

List of articles required

- Face mask
- Clean disposable gloves (1 pair)
- 70% alcohol, aqueous 2% chlorhexidine gluconate or iodophors
- Sterile transparent dressing
- Adhesive tape with cutter
- Kidney tray
- A sterile tray containing
- Cotton swabs
- Gauze pieces
- Sterile gloves (1 pair).

Procedure for central line care

- Explain the procedure to the patient and provide privacy
- Arrange equipment at the patient side.
- Perform hand hygiene, wear cleangloves.
- Remove old dressing with care not to dislodge the central venous catheter in the direction of insertion.
- Assess the site for any signs of infection like purulent discharges, redness, tenderness or swelling.
- If there is any sign of infection take a swab for culture and remove the catheter immediately with the physician's order.
- Visually inspect catheter from hub to skin.

- Remove gloves and don sterile gloves.
- Clean exit site in a circular manner from center to periphery, for about 3 cm using 2% chlorhexidine swab and alcohol or according to hospital policy and apply sterile occlusive transparent dressing.
- Apply label with date and time of dressing change.
- Maintain 100% sterility before and throughout CVC handling.
- Change the dressing every 7 days and whenever visibly soiled.
- Prefer gauze dressing over transparent dressing, if patient is diaphoretic, site is bleeding and oozing and change every 2 days and whenever indicated/ visibly soaked.
- Wrap the ports and secure the tubing to prevent accidental displacement.
- Remove gloves and dispose off all used materials.
- Discard the articles as per the bio medical waste management policy.
- Perform hand hygiene.
- Document the assessment findings, condition of dressing along with date and time.
- Follow the bundles of care according to hospital policy.

Complications associated with CVC

- Air embolus
- Infection
- Occlusion
- Pneumothorax
- Device malfunction
- Extravasation
- Catheter dislodgement or migration
- Phlebitis
- Venous thrombosis

Clinical significance

Central lines are not only meant for resuscitation also we can able to know the hydration status of the patient, CVP measuring, parenteral nutrition etc. Central line insertion is mainly done by doctors, but the central care are done by nurses. Now a days in order to avoid infections, central care bundles are followed in most of the hospitals. From the past research works it has been evident that the incidence of occurring chest infections are less those who are following central line properly. So it is very clear that central line care is very much clinically significant.

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