PARENTERAL THERAPY

# MEASURING CENTRAL VENOUS PRESSURE (CVP)

**Keywords:** CVP, transducer, phlebostatic axis, central venous pressure

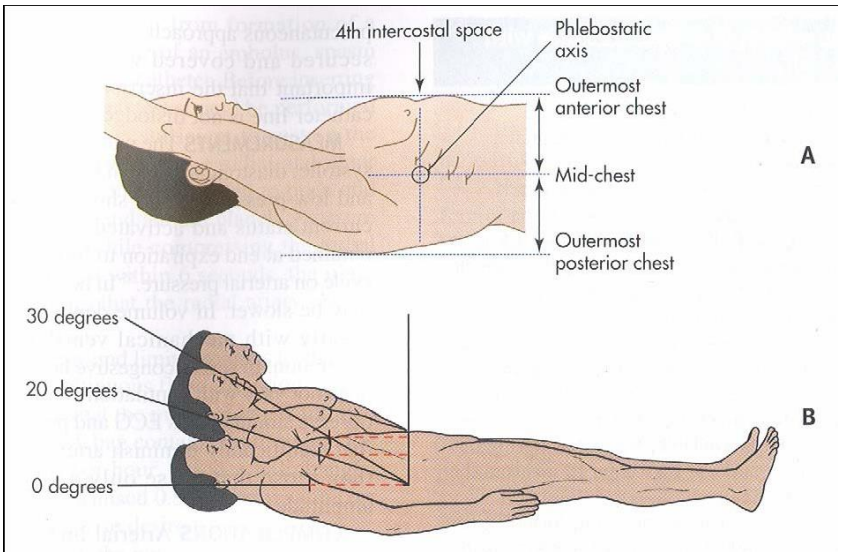
## AIM

- To monitor pressure in the central venous circulation to detect potential problems and/ or evaluate patient status.

## KEY POINTS

1. Central Venous Pressure (CVP) relates to an adequate circulatory blood supply. Pressure depends on blood volume, cardiac contractility and vascular tone[1].
2. CVP is measured in the right atrium or vena cava close to the heart and is a reflection of fluid volume[2] and guides fluid administration, replacement or diuretic administration[3].

   Normal range for CVP is 2 to 8mmHg ***or*** 3 to10cm$H_2O$ [3]. The CVP may be measured with a manometer or transducer.
   - Low CVP may indicate hypovolaemia
   - Elevated CVP indicates right ventricular failure or volume overload.
3. Accurate measurement requires equipment levelled to a reference point on the patient. This point is the **phlebostatic axis**[2] (at the intersection of the midaxillary line and fourth intercostal space) and should be marked with indelible marker. See Clinical Guideline, O&G: Parenteral Therapy: Arterial Line




4. Observe:
   - Hand hygiene before and after any manipulation of vascular access devices or catheter sites[4, 5] (Level I). See Infection Control Manual Policy Hand Hygiene
   - An aseptic technique
   - Standard precautions. See Infection Control Manual Policy Standard Precautions
5. Sterile disposable transducers, pressure tubing and line are replaced at 96 hour intervals[4].

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## FOR CVP MONITORING WITH A TRANSDUCER AND MONITOR

### EQUIPMENT

- Transducer / pressure tubing / fluid path
- Pressure bag
- Monitor
- Sodium chloride 0.9% 500mL

### PROCEDURE

- Obtain verbal consent
- Position patient supine or semi recumbent to 30-45 degree elevation
- Prime pressure tubing with Sodium chloride 0.9%, close connections
- Check flushing mechanism
- Apply the pressure bag and inflate to 300mmHg
- Connect to monitor transducer cable
- Calibrate zero and level the transducer to the phlebostatic axis
- Attach extension tubing to central venous catheter, open fluid path, and adjust rate
- Close the stopcock to the patient and open to air and read the display monitor at end of expiration
- Reopen stopcock to patient; recommence intravenous transfusion at prescribed rate
- Record the result
- Report abnormal readings or change in trends
- Monitor insertion site for infection, bleeding and disconnection. See Clinical Guidelines, O&G: Parenteral Therapy: Arterial Line.

### REFERENCES ( STANDARDS)


1. Hagle M, . Johnson, B P., Ladewig, N., Montenero, D., Pawlak T.,. Central Venous Access. In: Weinstein Sharon M, editor. **Plumer's Principles & Practice of Intravenous Therapy,**. Eighth ed. Philadelphia: Lippincott Williams & Wilkins; 2007. p. Ch 14, p277-330.
2. Bucher L, adapted by Kelly M. Nursing Management: critical care environment,. In: Brown D, Edwards H, et al., editors. **Lewis's Medical-Surgical Nursing Assessment and Management of Clinical Problems**. Sydney: Mosby Elsevier; 2005. p. p 1756-93.
3. Walters Billie Jean. Central Venous Pressure Management. In: Fultz Julia SPA, Walters Billie Jean,. editor. **Mosby's Emergency Nursing Reference**. Third ed. St Louis: Elsevier Mosby; 2005. p. 793-4.
4. Centre for Disease Control. Guidelines for the Prevention of Intravascular Catheter-Related Infections. **Morbitity and Mortality Weekly Report**. 2002;51(RR10).
5. Intravenous Nurses Society. Site selection and placement. **Journal of Infusion Nursing**. 2006;29(1):S44.


National Standards – 3 Preventing and Controlling Healthcare Associated Infections
Legislation - Nil
Related Policies – KEMH Clinical Guidelines: O&G: Parenteral Therapy
Other related documents – Nil

| RESPONSIBILITY | |
|---|---|
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