



HEALTH HOLDING

HAFA ALBATIN HEALTH  
CLUSTER  
MATERNITY AND  
CHILDREN HOSPITAL

<b>Department:</b>	Pediatric Intensive Care Unit (PICU)		
<b>Document:</b>	Departmental Policy and Procedure		
<b>Title:</b>	Central Venous Pressure Monitoring		
<b>Applies To:</b>	All Pediatric Intensive Care Unit Staff		
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## 1. PURPOSE:

- 1.1 To assess the fluid status of patient in intensive care unit.
- 1.2 To determine pressure in the right atrium and central veins.
- 1.3 To evaluate circulatory failure.

## 2. DEFINITIONS:

- 2.1 **Central Venous Pressure (CVP) Monitoring** – is a continuous measurement of pressure within the right atrium or in the great veins of the heart.

## 3. POLICY:

- 3.1 Reading of central venous pressure must be performed by a qualified nurse.
- 3.2 Standard precaution must be observed.

## 4. PROCEDURE:

- 4.1 Preparation:
  - 4.1.1 Ensure that the patient and family understand pre – procedural teaching.
  - 4.1.2 Place patient in the supine position.
- 4.2 Central Venous Pressure (CVP) measurement using water manometer method:
  - 4.2.1 Perform hand hygiene.
  - 4.2.2 Locate the phlebostatic axis.
  - 4.2.3 Place the patient in the supine position with the head of the bed from 0 – 45 degrees.
  - 4.2.4 Attach the water manometer to the Central Venous Pressure (CVP) tubing system and flush the tubing with normal saline solution while the system is off to the patient.
  - 4.2.5 Place the zero level of the water manometer at the level of the phlebostatic axis.
  - 4.2.6 Turn the water manometer stopcock open to the flush solution.
  - 4.2.7 Open the IV tubing roller clamp so that fluid flows from the IV fluid solution into the water manometer.
    - 4.2.7.1 Fill the manometer two thirds full or above the level of the expected Central Venous Pressure (CVP) measurement.
    - 4.2.7.2 Ensure that there are no air bubbles in the manometer.
    - 4.2.7.3 Close the roller clamp on the IV tubing.
  - 4.2.8 Turn the water manometer stopcock open to the patient and closed to the IV solution.
  - 4.2.9 Observe the fluid column closely. It should fluctuate gently with the patient's respiratory cycle.
  - 4.2.10 The fluid column should fall quickly and then fluctuate gently at the point at which the fluid column equalizes with the Right Arterial Pressure (RAP). Measure the Central Venous Pressure (CVP) reading at end – expiration.

- 4.2.11 Turn the water manometer stopcock open to the flush solution and the patient, and re – establish the IV fluid infusion.
- 4.2.12 Perform hand hygiene.
- 4.3 Central Venous Pressure (CVP) measurement using a hemodynamic monitoring system:
  - 4.3.1 Perform hand hygiene.
  - 4.3.2 Validate the waveform as Central Venous Pressure (CVP)/ Right Arterial Pressure (RAP) on the bedside monitor.
  - 4.3.3 Place the patient in the supine position with the head of the bed from 0 – 45 degrees.
  - 4.3.4 Prepare the hemodynamic monitoring system.
  - 4.3.5 Level the air – fluid interface of the monitoring system to the phlebostatic axis.
  - 4.3.6 Run a dual – channel strip of the ECG and right atrial waveform.
  - 4.3.7 Measure the Central Venous Pressure (CVP) or Right Arterial Pressure (RAP) at end – expiration.
  - 4.3.8 Using the dual – channel recorded strip, draw a vertical line from the beginning of the P wave of one of the ECG complexes down to the Right Arterial Pressure (RAP) waveform. Repeat this with the next ECG complex.
  - 4.3.9 Align the PR interval with the Right Arterial Pressure (RAP) waveform.
  - 4.3.10 Identify the  $\alpha$  wave.
  - 4.3.11 Identify the scale of the Right Arterial Pressure (RAP) tracing.
  - 4.3.12 Measure the mean of the  $\alpha$  wave to obtain the Right Arterial Pressure (RAP).
  - 4.3.13 Perform hand hygiene.
- 4.4 Post procedure monitoring and care:
  - 4.4.1 Monitor patient's vital signs every 2 hours or more frequently if the patient's condition indicates.
  - 4.4.2 Continue monitoring of the Central Venous Pressure (CVP) waveform if using the hemodynamic monitoring system.
  - 4.4.3 Measure the Central Venous Pressure (CVP) every 2 hours and as needed if using the water manometer method.
- 4.5 Documentation:
  - 4.5.1 Patient and family education.
  - 4.5.2 Patient's tolerance to the procedure.
  - 4.5.3 Cardiopulmonary assessment.
  - 4.5.4 Assessment and labelled Central Venous Pressure (CVP) waveform, if appropriate.
  - 4.5.5 IV intake, including amount of flush solution.
  - 4.5.6 Assessment of fluid balance.
  - 4.5.7 Confirm of RA catheter placement with x – ray film or waveforms.
  - 4.5.8 Unexpected outcomes.
  - 4.5.9 Additional interventions.

## 5. MATERIALS AND EQUIPMENT:

- 5.1 Venous Pressure Tray
- 5.2 Infusion Solution and Infusion Set
- 5.3 3 or 4 way stopcock (a Transducer may be used)
- 5.4 IV pole attached to bed, arm board, adhesive tape

## 6. RESPONSIBILITIES:

- 6.1 Physician
- 6.2 Nurse




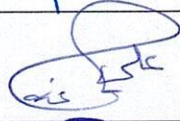



## 7. APPENDICES:

N/A

## 8. REFERENCES:

- 8.1 Nursing Clinical Practice Guidelines, 2015.
- 8.2 Kingdom of Saudi Arabia, Ministry of Health, Prince Mutaib Bin Abdulaziz Hospital, 1439.
- 8.3 <https://journals.vcni.com/nursing-standard/role-of-central-venous-pressure-monitoring>.

## 9. APPROVALS:

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