LOS ANGELES COUNTY+UNIVERSITY OF SOUTHERN CALIFORNIA MEDICAL CENTER
DEPARTMENT OF NURSING SERVICES

# INTRA-ABDOMINAL (BLADDER) PRESSURE SET-UP, MEASUREMENT, AND TROUBLESHOOTING PROCEDURE

PURPOSE:

To outline the nursing responsibility in performing intra-abdominal pressure (IAP) measurements using the water manometer setup.

SUPPORTIVE DATA:

Elevated IAP (> 20 cm $H_20$ / > 15 mm Hg) can cause abdominal compartment syndrome (ACS) resulting in renal, cardiovascular, and pulmonary compromise. High morbidity and mortality is associated with ACS. IAP is monitored by performing bladder pressure measurements.

See Intra-abdominal Pressure Measurement Nursing Clinical Standard.

EQUIPMENT LIST:

- Indwelling bladder catheter & drainage bag
- Primary I.V. tubing
- Central Venous Pressure (CVP) manometer kit
- 2 Luer-lock stopcocks
- 30 mL syringe (Luer-lock tip)
- Carpenter's level
- 250 or 500 mL of normal saline (NS)
- Chlorhexidine swab
- Kelly clamps (2)
- 4 X 4 gauze
- Standard I.V. pole
- I.V. port cap

**CONTENT:**

| **PROCEDURE STEPS** | **KEY POINTS** |
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| ***Set-Up*** | |
| | |
| 1. Open CVP manometer kit and attach to I.V. pole. | |
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| 2. Attach normal saline I.V. bag to primary tubing; then attach primary tubing to stopcock port on CVP manometer (stopcock #1). | |
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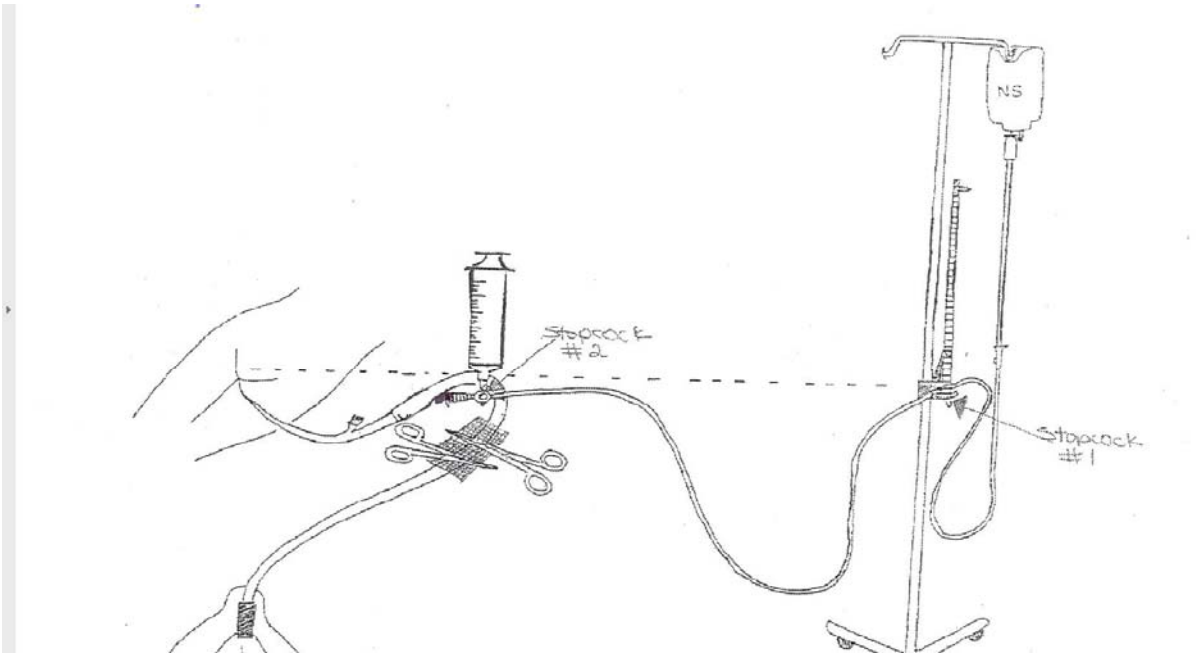
| PROCEDURE STEPS | KEY POINTS |
|---|---|
| 3. Attach CVP manometer tubing to the female end of Luer-Lock (stopcock #2). | |
| 4. Attach empty 30 mL syringe to top of stopcock #2. | |
| 5. Turn stopcock #1 "off" to manometer. | |
| 6. Flush the primary tubing, CVP manometer tubing, and stopcock #2 from the IV bag. | |




| PROCEDURE STEPS | KEY POINTS |
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| ***Measurement*** | |
| | |
| 7. Turn stopcock #1 "on" to both primary tubing and manometer and "off" to manometer tubing. | |

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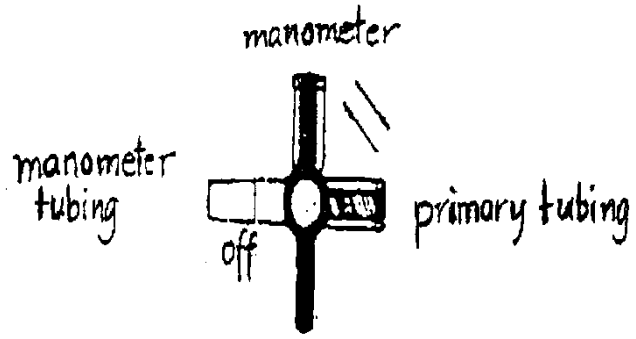
|  | |
| 8. Fill manometer with NS to 30 mL. | |
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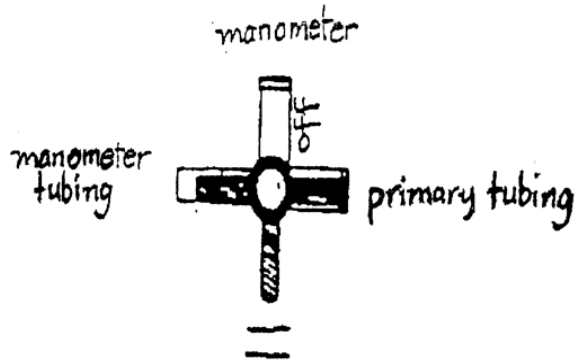
| 9. Turn stopcock #1 "off" to manometer. | |
|  | |
| 10. Place the patient supine. | Patient must be supine with head of bed (HOB) flat. HOB elevation falsely increases IAP by compressing the bladder with pressure from abdominal and intra-thoracic contents. |

| PROCEDURE STEPS | KEY POINTS |
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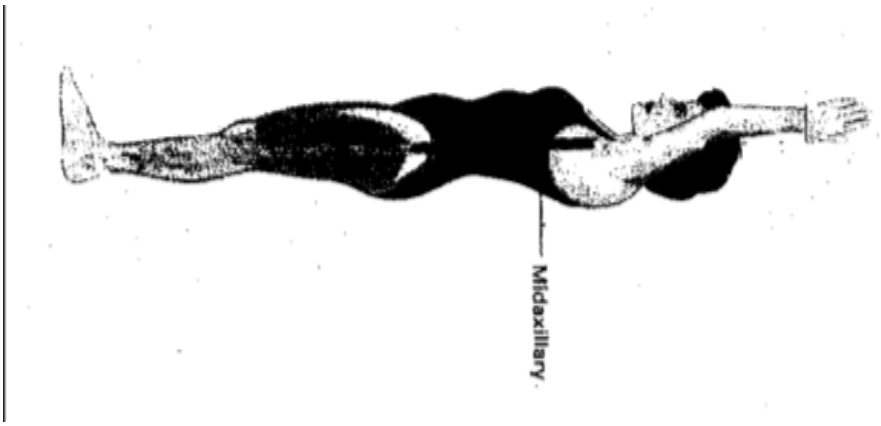
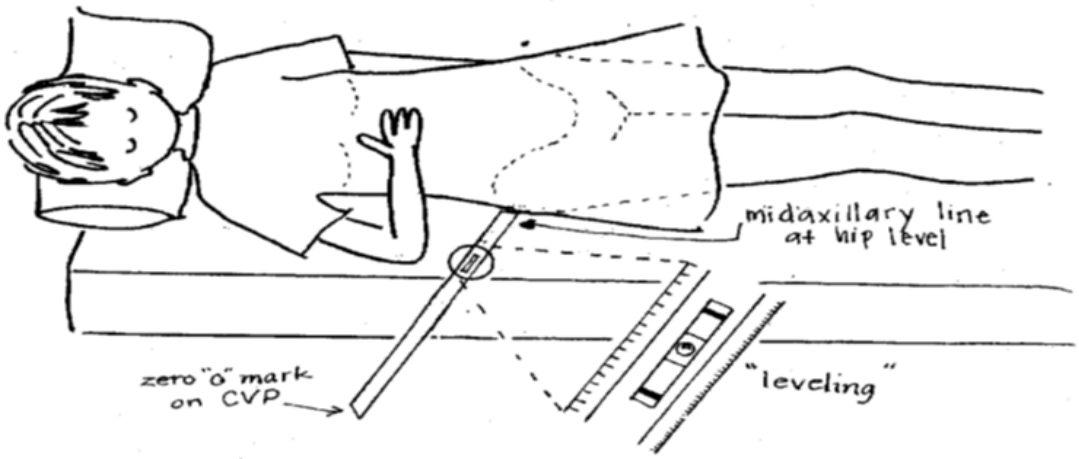
| 11. Identify midaxillary line at the hip. Level and place a mark on this site. | Correct leveling ensures that IAP measurements are performed consistently and accurately. |
|  | Leveling to the midaxillary line (with HOB flat) best approximates the bladder.<br><br>**Midaxillary line and phlebostatic axis are not interchangeable.** |
| 12. Place one end of carpenter's level even with the "0" on the CVP pressure manometer. Level to the mark on the hip. | |



| PROCEDURE STEPS | KEY POINTS |
|---|---|
| 13. Drain the indwelling bladder catheter and tubing. | |
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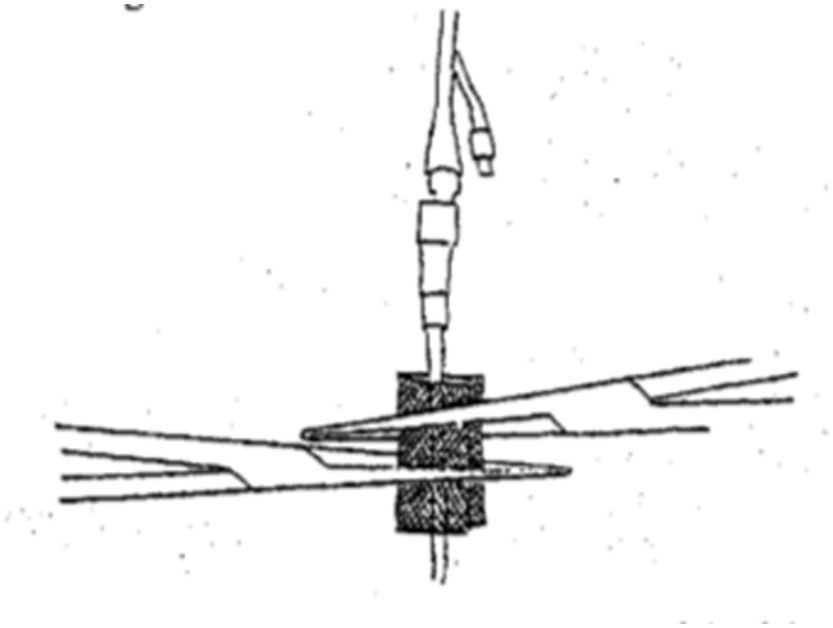
| 14. Wrap 4x4 gauze around the catheter drainage tubing just distal to the aspiration port. Using the two Kelly clamps, facing opposite directions, clamp the drainage tubing over 4x4 gauze. | The gauze protects the catheter tubing. |
|  | |
| 15. Scrub the aspiration port with chlorhexidine swab. Allow to dry. | |
| 16. Uncap stopcock #2 and attach to aspiration port. | |
| 17. Turn stopcock #2 "off" to aspiration port. Fill syringe with 20 mL NS from I.V. bag for adults. | For pediatric patients, infuse 1mL/kg + 2 mLs (up to 18 kg child). For children weighing >18 kg, instill 20 mLs. |
| 18. Turn stopcock #2 "off" to the manometer. Instill 20 mLs NS (or appropriate pediatric amount) over 10-15 seconds into patient's bladder. | Do Not inject quickly as this can induce bladder spasms. |
| 19. Turn stopcock #2 "off" to syringe. | |

| PROCEDURE STEPS | KEY POINTS |
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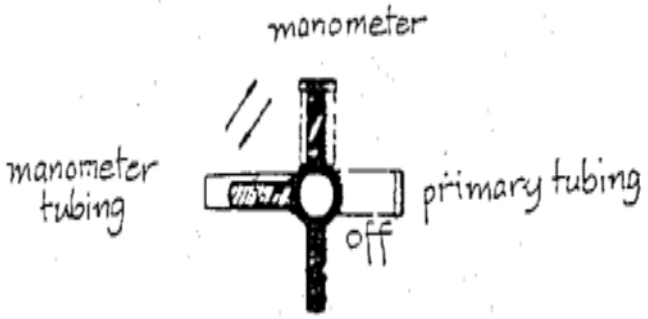
| 20. Turn stopcock #1 "off" to primary tubing and I.V. solution. | |
|  | |
| 21. Monitor the fluid level in the CVP manometer and obtain the IAP reading when the fluid column stops dropping.<br>• Small fluctuations will be present<br>• Read at end-expiration | |
| 22. Turn stopcock #2 "off" to aspiration port and remove from Foley. Place cap on end of stopcock. | |
| 23. Unclamp drainage tubing. | |
| 24. Document obtained IAP measurement and trend with previous pressures.<br>• Subtract injected volume from next output | |
| Date Approved: 02/98<br>Date Revised: 06/07, 3/09, 8/20<br>Approved By: Nursing Executive Council<br>Attending Staff Association Executive Committee | |