



RCNIC MANUAL
UMBILICAL CATHETERS (UAC AND
UVC), ARTERIAL LINES AND
PRESSURE MONITORING

POLICY # III-2.05

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DATE OF ORIGINAL: 12/88

DATE OF REVIEW: 7/92, 5/98, 5/01, 6/03,
6/06

SUBJECT: Umbilical Catheters (UAC and UVC) Arterial Lines and Pressure Monitoring

REVISION DATES: 7/92, 5/98, 5/01, 6/03, 6/06

APPROVAL

I. PURPOSE

To ensure safe and consistent management of umbilical catheters and arterial lines.

II. PERSONNEL

- A. RN
- B. Physician/APN
- C. RT

III. IMPLEMENTATION

- A. Maintenance of Line Patency
 - 1. Infuse specified heparinized IV fluids at a rate necessary to maintain total fluid volume per hour as ordered by physician/APN.
 - a. UAC and Arterial lines - minimum rate to be 0.5-mL/hr to ensure line patency. Maximum rates 2.0-mL/hr.
 - b. UVC - minimum rate to be 1.0-mL/hr to ensure line patency.
 - 2. Flush with 0.5 - 0.8-mL of heparinized normal saline (2 units/mL) after obtaining blood samples for requested labs.
- B. Measurement of Central Pressures
 - 1. Attach all arterial lines to pressure transducer.
 - 2. Secure transducer such that the midpoint of the transducer is exactly at the level of the mid axillary line.
 - 3. Establish a wave form on the monitor screen. Be aware that you may not be able to establish a good wave form due to the patient's condition.
 - 4. Zero pressure reading according to monitor instructions.
 - 5. Set pressure alarms for arterial catheters appropriate for individual infants. (See chart below.)



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Weight	< 1000gm	1001-2000gm	2001-3000gm	> 3000 gm
Systolic hi limit	80	100	100	110
Systolic lo limit	30	40	50	60
Diastolic hi limit	50	50	50	50
Diastolic lo limit	20	20	20	20
Mean hi limit	60	70	70	70
Mean lo limit	25	35	40	45

6. Read mean pressures continuously with alarm limits activated, while infusing fluids.

7. If wave form becomes dampened:

- a. Check all connections.
- b. Gently irrigate catheter with specified flush solutions. Do not irrigate repeatedly.
- c. If poor wave form continues, try repositioning infant or extremity (the line may be against the vessel wall).
- d. If unable to resolve, notify physician/APN.

C. Safety - Maintenance of Hemostasis

- 1. Ensure that all connections are intact.
- 2. Ensure that the catheter is secured by being sutured in place (physician/APN responsibility) and/or by using tape "bridge" (for umbilical lines).
- 3. Document UAC/UVC catheter length at umbilicus.
- 4. Set monitor alarms and document on flow sheet.



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5. If oozing of blood is observed at umbilical stump or insertion site, carefully tighten umbilical tape if present or apply gentle but firm pressure on stump or site. Document observations, interventions and effectiveness of interventions. Notify the physician/APN.
6. Have padded hemostats at infant's bedside.
7. Label UVC with blue tape and UAC or arterial lines with red tape.

D. Safety - Maintenance of Acceptable Fluid Volume Balance

1. Record amount of fluid infused hourly.
 - a. Acceptable solutions for maintaining arterial line patency include:
 1. Heparinized Saline (1 unit/ml)
 2. ¼ normal saline with Heparin 1 unit/ml
 3. Other fluids per physician's order
2. Record transduced blood press readings hourly.
3. Record type and amount of all flush solutions used.
4. Record amount of blood volume obtained from infant in appropriate space on flow sheet.

E. Safety - Maintenance of Physical Security.

1. Change IV fluid every 24 hours
2. Change tubing at least every 72 hours.
3. Change transducer every 72 hours (Cobe recommendations).
4. Document date and time of all fluid and tubing changes on flow sheet, tubing and fluid containers.
5. Maintain aseptic technique when entering system (changing fluids, tubing or obtaining blood samples).
6. Thoroughly prime all tubing being sure tubing is free of air.
7. Gently aspirate line, or add drops of flush at stopcock prior to instilling flush solution to ensure displacement of air bubbles from stopcock hub.
8. Assess perfusion of abdomen, lower back, buttocks, toes, feet, and legs if umbilical line and appropriate extremity if arterial line at a minimum of 2 hour intervals and after entering the line.

Check:

- a. Color (cyanosis, blanching, ecchymosis are abnormal)



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- b. Bilateral femoral and pedal pulses and/or brachial pulses
 - c. Bilateral capillary refill
 - d. Temperature by touch of extremities
 - e. If socks or booties are on feet, remove them at least 2 hours to assess the extremities.
9. Observe UAC/UVC and arterial line site and connections every 1 hour. Document observations at a minimum of 4 hour intervals on flowsheet.
10. Document and report abnormal findings to physician/APN.
11. Document interventions as well as infant's response interventions.
12. If resistance is met when flushing, do not force. Notify physician/APN.
13. All flushes must be pushed at rate not to exceed 0.5-mL/5 seconds.
14. Verify appropriate placement of catheter with physician/APN prior to start of IVF infusion and as necessary to minimize incidence of complications.
 - a. UAC - recommended low placement - tip of catheter at L3-L4.
 - b. UVC - tip of catheter should be visible just above the diaphragm on x-ray.
 - ❖ Ideal placement is at the junction of the inferior vena cava and the right atrium.
1. Requires physician/APN order.
2. Discontinuation of UAC and UVC to be done by physician/APN/RN (once competency is completed)
3. Under direction of physician/APN, RN turn off fluids infusing through the lines and turn stopcock of to patient.
4. Physician/APN/RN will cut sutures and/or loosen the bridge.
5. After about 5 minutes, gently withdraw the umbilical catheter until 3 cm is even with the umbilical stump.
6. After waiting a final 5-10 minutes, gently remove the catheter applying gentle yet firm pressure to the umbilical stump with a sterile 4 X 4 gauze. Apply pressure for 3 to 5 or until oozing of blood stops. Observe closely for an additional 10 minutes.
7. Keep infant supine or on side for 2 to 4 hours to prevent accidental trauma to cord stump resulting in onset of bleeding from catheter site.
8. Document procedure and infant status on flow sheet and narrative.



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9. Document post removal status of site and necessary interventions:
10. Clean cable between patients with hospital approved cleaning solutions. Do not use alcohol.

G. Discontinuation of Arterial Line

1. Requires physician/APN order.
2. Can be done by R.N. (must complete competency)
3. Turn off fluids infusing through line.
4. Turn stopcock off to patient.
5. After about 5 minutes, cut the sutures holding the catheter and gently withdraw the catheter from the artery, applying gentle yet firm pressure to the site with a sterile 4 X 4 gauze. Apply pressure for 3 to 5 minutes or until oozing of blood stops. Observe closely for an additional 10 minutes.
6. Document procedure and infant status on flow sheet and narrative.
7. Document post removal status of site and necessary interventions.
8. Clean between patients with hospital approved cleaning solution. Do not use alcohol.