Thunder Bay Regional Health Sciences Centre Policies, Procedures, Standard Operating Practices	No. CCS-2-12
Title: *Intra-Aortic Balloon Pump Management (IABP)	☐ Policy ☐ Procedure ☒ SOP
Category: Unit Specific **Dept/Prog/Service:** Critical Care / Cardiac Catheterization Laboratory	**Distribution:** Critical Care/Cardiac Catheterization Lab
Approved: Exec. VP, Patient Services, & Chief Nursing Executive **Signature:**	**Approval Date:** May 1, 2001 **Reviewed/Revised Date:** Jun. 7, 2016 **Next Review Date:** Jun. 7, 2019

CROSS REFERENCES: (CCS-3-03) Intra aortic Balloon Pump (IABP) Process and Air Transfer, (CS-228) IABP Waveform Strip Record

INTRODUCTION:

The overall goal of intra-aortic balloon pump (IABP) is to provide cardiac support to patients whose myocardial oxygen supply and demand are imbalanced. Counterpulsation achieves this goal by increasing coronary and systemic perfusion, decreasing afterload and decreasing preload.

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POLICY:

- Registered nurses (RNs) who have met the educational and competency requirements for the management of the IABP will be able to:
  - Set-up and assist with insertion.
  - Monitor patient response to counterpulsation in terms of the hemodynamic effects of IABP therapy, control of arrhythmias, systemic perfusion and relief of symptoms related to cardiac ischemia.
  - Observe for early signs of complications related to IABP therapy (limb ischemia, bleeding, infection, thrombus formation, IABP catheter malposition and arterial damage).
  - Adjust pump timing and pumping ratios to maximize patient condition (reduce ischemic chest pain, increase arterial pressure).
  - Ensure proper functioning of the IABP and troubleshoot/correct all alarm situations.
  - Draw blood samples from central lumen upon a physician's order.
  - Accompany air flight transfer of patient to another facility.

- Assist with intra-aortic balloon (IAB) catheter removal.

- AutoPilot mode will be the preferred mode for console operation, as long as timing is evaluated to be appropriate.

- <u>The cardiologist is responsible for the following</u>:
  - Explain procedure and associated risks to patient/family.
  - Obtain consent.
  - Insertion, irrigation, repositioning of catheter and removal.

- <u>The intensivist or cardiologist is responsible for the following</u>:
  - Order hemodynamic and clinical parameters for IABP therapy.
  - Peripheral arterial line insertion.
  - Removal of the IABP catheter.

I. PATIENT ASSESSMENT (PRE-INSERTION)

Good assessment prior to insertion documents the need for therapy and provides a baseline for evaluation of treatment effectiveness. A complete pre-insertion assessment includes:

- Skin colour of both legs.
- Skin temperature of both legs.
- Capillary refill ability of both legs.
- Quality of pulses in both legs.
- Sensation and movement of both legs.
- Ankle/brachial index of both legs.
- Pre-insertion hemodynamics.
- Complete neurological check.
- Bilateral calf measurement.

A. <u>Calculating Ankle/Brachial Index</u>

Equipment:
- Handheld Doppler
- Nonsterile gauze or tissue
- 1 x Package of conductivity gel
- Manual blood pressure cuff

1. Explain procedure to patient/family. Gather equipment. Perform hand hygiene.
2. Position patient supine for 10-minutes before performing ankle-brachial index.
3. Record the systolic pressure of **both right and left arms.**
4. Apply BP cuff 1 inch above the patient's right elbow or ankle. Using a Doppler locate the artery (brachial, posterior tibial, or dorsalis pedis).
5. Apply a fingertip sized amount of conductivity gel over the artery. Turn on Doppler. Place the tip of the Doppler probe into the conductivity gel, listen for a "whooshing" sound, which indicates the artery signal (pulse).
6. Inflate the BP cuff until you no longer hear the signal (pulse), then an additional 20 to 30 mm Hg above that point.
7. Deflate the cuff slowly until you hear two consecutive beats, which indicates the systolic BP. Record this as the systolic pressure and repeat steps 3 to 6 for the other arm.
8. The higher pressure between the right and left arm will be the brachial pressure.
9. Record the systolic blood pressure for the right posterior tibial and dorsalis pedis. Locate the posterior tibial pulse on inside of leg between the bony protrusion of the ankle and the Achilles tendon, follow steps 4-6 and record the systolic pressure. Wait two minutes and repeat the measure for the dorsal

pedis artery. The dorsal pedis artery is found on the top of the foot below the ankle, repeat steps 3-6 and record dorsalis pedis systolic pressure. The higher pressure between the right posterior tibial and right dorsal pedis artery will be the right ankle pressure used.
10. Repeat step 6 on the other limb.
11. **Divide the systolic pressure from the ankle by the brachial (arm) systolic pressure.**
12. **Right ABI=** highest right ankle pressure divided by the brachial pressure
13. **Left ABI=** highest left ankle pressure divided by the brachial pressure
14. Document on the Meditech intervention.

II. SETUP AND INSERTION (Cardiac Catheterization Lab team, Critical Care RN to accompany patient)

Equipment:
- Balloon pump console with all necessary patient cables (direct)
- 5 x ECG electrodes
- 1 x Premixed 0.9% normal saline 500 mL with 1,000 units of heparin
- 1 x Sterile Cath Lab Kit
- Suture material
- 1 x 10 mL syringe
- Antiseptic solution
- 1 x Intra-aortic balloon catheter (refer to sizing guide)
- 1 x Single-pressure transducer system
- 2 x Sterile gloves (one pair for physician, one for assistant)
- 1 x 1% or lidocaine without epinephrine
- 2 x Emla patch
- 1 x Transparent dressing
  - Tegaderm IV Advanced™ 1685
- 1 x Sterile basin

A. <u>Balloon Catheter Sizing Guide</u>

	30 cc	**40 cc**	**50 cc**
Height	147 – 162 cm (4'10" – 5'4")	162 – 182 cm (5'4" – 6'0")	Greater than 182 cm (greater than 6'0")
BSA	Less than 1.8 m^2	Greater than 1.8 m^2	

Balloon sizing can be evaluated by monitoring the balloon pressure waveform and arterial pressure during the inflation of the balloon. At full inflation, the plateau pressure should be within +/- 20 mmHg of the peak diastolic pressure (PDP).
★Note: A smaller balloon may be inserted if proper size is unavailable but never larger.

B. <u>Set-up Prior to Insertion</u>

1. Prepare both groins: cleanse skin with Chlorhexidine 4% surgical sponge (E-Z Scrub 747) and clip hair if needed. If time permits, apply topical anesthetic patch (Emla) to bilateral groins at least one hour prior to procedure.
2. Pre-sedate the patient as prescribed; the affected extremity may need to be restrained.
3. <u>Prepare the IABP console</u>:
   a. Plug in console power and turn power on.
   b. Open the helium tank and verify adequate helium supply.
   c. Place the five ECG electrodes on the patient's chest and connect IABP ECG source. Ensure ECG configuration with optimal R-wave amplitude and absence of artifact.
   d. Connect arterial line transducer to the console.
4. Prime single-pressure transducer system as per policy Arterial Line Management (PAT-2-25).
5. Assist with placement of peripheral arterial line if not already present. Refer to policy Arterial Line Management (PAT-2-25).
6. Skin prep to insertion site and drape intended insertion site with sterile drapes.
7. Under sterile technique, open insertion line section within IABP kit.
8. Assist with line insertion. Until vascular access is obtained, keep IAB catheter in wrapped package.

9. Zeroing and calibration of FiberOptix sensor (if not using a FiberOptix catheter, zero arterial transducer after the IAB is positioned in the patient):
    a. Pass the FiberOptix sensor and calibration key to the pump operator.
    b. Connect FiberOptix sensor and calibration key BEFORE INSERTION, a two beep audible tone will be issued when sensor is properly connected.
    c. The console will automatically zero the sensor. Verify the FiberOptix icon has changed from blue to green.
10. Once access is obtained, open IAB catheter package and prepare line. Remove central lumen stylet and flush with heparinized saline in 10 mL syringe. Attach one-way valve to the luer tip of the distal end of the balloon helium line.
11. Connect the 60 mL syringe to the one-way valve and generate negative pressure until syringe plunger is completely removed from barrel of syringe. DO NOT remove the one-way valve until the IAB catheter is inserted into the patient.
12. If IAB is to be inserted through a sheath, remove pre-mounted hemostasis device if present. Sheath without side port should be used.

NOTE: If FiberOptix was not calibrated prior to IAB insertion:
    a. Record mean arterial pressure (MAP) from arterial BP.
    b. Zero FiberOptix sensor:
        i. Press AP SELECT, then FOS MAP CAL key.
        ii. Adjust the MAP value (increments of 5 mm Hg).
        iii. FiberOptix icon (light-bulb) will change to white indicating manual zero.

C. Post IAB Catheter Insertion

1. Once IAB catheter is inserted and guidewire removed, attach short extension tubing to catheter. Adjust stopcocks to allow back bleeding to purge air.
2. Attach pressurized transducer to central lumen.
3. Zero the AP Transducer:
    a. Verify “XDUCER” is selected, if not select it using the AP SELECT key until LED next to XDUCER is lit.
    b. Level and secure the transducer.
    c. Open the transducer to air.
    d. Press “XDUCER ZERO” key.
    e. Verify the message “TRANSDUCER ZEROED” appears on the display.
    f. Close transducer to air.
4. Remove the one-way valve from helium line of catheter, connect to helium cable and then to IABP console.
5. To initiate pumping:
    a. Verify that the IABP is in the AutoPilot mode.
    b. Verify trigger recognition (flashing heart icon and white overlay on ECG).
    c. Press the green “ON” key.
    d. Observe arterial pressure tracing on screen and evaluate timing in an assist ratio of 1:2.
6. Ensure that sterile gloves are maintained or reapplied if required.
7. Assist with suturing the catheter site as required.
8. Apply sterile transparent dressing to site.
9. Remove gloves. Perform hand hygiene.
10. Record arterial and balloon waveforms, mount strip on IABP waveform sheet (CS-228). Ensure alarms are activated.
11. Obtain a portable chest x-ray as soon as possible (if required). Temporarily place the IABP on standby while obtaining the x-ray.
12. Document site, IAB size, catheter size, catheter serial number, and initial pressures on IABP Flowsheet (CS-227).
13. Document post-insertion assessment on IABP Flowsheet (CS-227).

14. Transfer to ICU. Ensure adaptors for "Datascope" unit (from insertion kit) are sent with patient so it is available for transfer to another facility.

III. MAINTENANCE AND CARE **(Critical Care)**

A. <u>Dressing Change</u> – Frequency: weekly or as required (prn)

Equipment:

- 1 x Transparent dressing
  - Tegaderm™ IV Advanced 1685
- Nonsterile gloves
- 1 x Antiseptic skin preparation swab (SoluPrep®)
- CVAD dressing tray (contains 1 pair of sterile gloves, procedural mask, sterile drape, 1" tape [3M™ Transpore™])

Procedure:

1. Gather supplies. Perform hand hygiene. Don nonsterile gloves.
2. Open CVAD dressing tray. Don mask.
3. Place sterile equipment onto sterile field.
4. Place sterile drape to groin area.
5. Remove old dressing. A second nurse may need to assist, one to remove dressing while the other secures the catheter.
6. Assess insertion site for manifestations of infection. Remove gloves.
7. Apply sterile gloves.
8. Cleanse the insertion site with SoluPrep® swab. Cleanse using back-and-forth strokes starting at the insertion site working outward. Clean an area larger than the size of the dressing. Contact time with the cleansing solution should be 30 seconds. Allow area to dry completely (do not fan area).
9. Apply transparent dressing. Do not secure the edges of the dressing with additional tape (this may cause the edges of the dressing to lift).
10. Secure tubing with strips provided in dressing package or 1" tape.
11. Remove gloves and perform hand hygiene.
12. Document.

B. <u>Intra-Aortic Catheter Care</u>

<u>Assessment:</u>

1. At the beginning of each shift, verify that the IABP parameters are correct and that timing optimizes patient condition. Timing markers are assessed at the beginning of each shift and as required in an assist ratio of 1:2.

★ **Note: Do not assess timing when using FiberOptix.**

2. At the beginning of each shift, re-zero AP transducer for quality assurance. DO NOT re-zero the FiberOptix sensor during use.
3. Monitor and record pressures every hour. If using assist ratio of 1:1 the APSP (assisted peak systolic pressure) and PAEDP (patient aortic end diastolic pressure) will need to be assessed in an assist ratio of 1:2.
4. Observe insertion site for manifestations of infection or other complications.
5. Ensure pressurized tubing is patent, free of air and is clear of blood; maintain pressure bag of flush system at 300 mm Hg.
6. Ensure transducer of femoral arterial flush system is secured and levelled.
7. Assess circulation to extremities every hour. Notify physician if capillary refill greater than 3 seconds, diminished or absent pulses.

8. Assess skin colour (pale, mottled, or cyanotic), temperature and sensation of all four extremities every 4 hours and as required.
9. Assess calf circumference once per shift and as required.
10. Perform a complete neurological assessment every 4 hours.
11. Monitor for signs of balloon perforation by assessing the helium tubing for evidence of discolouration or blood in the tubing.
12. Assess helium level at the beginning of each shift; ensure a spare tank is available.
13. Check cold trap at the beginning of each shift; empty as required.
14. Ensure IABP ECG leads are secure; identify IABP ECG leads with tape.

Implementation:

1. Ensure daily chest x-ray is ordered. Temporarily place the IABP on standby while obtaining the the x-ray.
2. Maintain the head of bed at less than 45°.
3. Reposition the patient every 2 hours; prop pillows to support the patient and to maintain alignment.
4. Initiate passive range-of-motion exercises every 2 hours to extremities that can be mobilized.
5. Provide routine chest physiotherapy (deep breathing and coughing, incentive spirometry, and gentle vibration) to promote secretion clearance and complications associated with immobility.
6. Report any signs of patient intolerance to IABP to the cardiologist or intensivist. These may include chest pain, hypotension, arrhythmias, ST changes, or low urinary output.
7. Report any pump malfunctions, static balloon, or balloon rupture conditions to cardiologist immediately. *Blood in the helium line is diagnostic of balloon rupture. If this occurs, STOP pumping, clamp the helium line close to the insertion site and page cardiology STAT. **Exsanguination can occur quickly from an aortic catheter. NEVER MANUALLY INFLATE BALLOON IF RUPTURE SUSPECTED.**
8. Use a standard arterial pressure-monitoring set-up with premixed heparinized saline. Set-up and solution are changed every 96 hours. Ensure that stopcock is turned off to patient with tubing changes.
9. **DO NOT DRAW BLOOD SAMPLES FROM THE CENTRAL LUMEN. Use peripheral arterial line or central venous access device whenever possible.** If no other line is available, a cardiologist's order is required to use the central aortic lumen for blood sampling. Refer to policy Arterial Line Management (PAT-2-25) for blood sampling procedure. IABP must be in "STANBY" for blood draws and fast-flushing.
10. Avoid routine fast-flushing of central aortic lumen. Fast flushing is limited to post blood draws and troubleshooting dampened arterial waveforms. If line is difficult to flush, do not force saline injection. Unresolved dampened arterial waveforms and inability to flush must be reported to cardiologist or intensivist.
11. The cardiologist will perform manipulation or irrigation of the central lumen. The RN will ensure the pump console is in "STANBY" to prevent accidental embolization.
12. If central lumen arterial waveform and peripheral arterial waveforms are lost, notify cardiologist or intensivist as correct timing cannot be evaluated. Pending the arrival, the RN can turn pump off and manually inflate and deflate the IAB 8 to 10 times per hour with air, using a volume 10 mL greater than the balloon size capacity (i.e., 50 cc for a 40 cc IAB). A catheter tip syringe is required to fit in the helium line. **NEVER INSTILL AIR INTO THE CENTRAL LUMEN.**

Notify Physician for:

- Decrease in quality of pulses distal to IAB insertion site.
- Impaired colour or sensation in an extremity.
- Bleeding at insertion site/hematoma.
- Sudden onset of back pain or shoulder blade pain.

- Persistent or increased chest pain.
- IABP non-functioning or blood in IABP helium line.
- Swelling and/or hardness of calf.
- Significant hemodynamic changes.
- Sudden decrease in urine output.

IV. REMOVAL OF CATHETER **(by cardiologist or intensivist)**

Equipment:

- 1 x Chlorhexidine Gluconate 2% (ChloraPrep®)
- Nonsterile gloves
- Procedural mask
- Eye protection
- 1 x 60 mL catheter tip syringe
- 1 x Suture removal kit
- Sterile gloves
- 1 x Sterile green towel
- 1 x Transparent dressing
  - Tegaderm™ 1626W
- 10 x Sterile 4" x 4" gauze

Procedure:

1. Explain procedure to the patient/family (patient will have restricted movement post removal).
2. Place the patient's head of bed flat.
3. Administer analgesia or sedation as prescribed.
4. Gather supplies. Perform hand hygiene. Don procedural mask and eye protection (physician and assistant).
5. Don nonsterile gloves. Place sterile towel to groin area.
6. Remove dressing and then remove nonsterile gloves.
7. Apply sterile gloves and cleanse insertion site with SoluPrep® swab. Cleanse using back-and-forth strokes starting at the insertion site working outward. Clean an area larger than the size of the dressing. Contact time with the cleansing solution should be 30 seconds. Allow area to dry completely (do not fan area).
8. Assist with removing anchoring ties and sutures.
9. Turn the IABP console to standby or off and discontinue the IAB from the console.

★ Note: the patient's BP will collapse the balloon, eliminating the necessity to aspirate the balloon with a catheter tip syringe. However, in some situations it is standard practice to reattach the one-way valve and aspirate with a 60 mL syringe prior to removal.

10. Assist the physician with removal of the percutaneous balloon. The physician will remove the balloon and sheath simultaneously.

★ Note: Never attempt to withdraw the balloon through the sheath. This practice can severely damage and fragment the balloon material.

11. Allow bleeding for 1 – 2 seconds to encourage extravascular loss of thromboembolic material.
12. If no femoral artery vascular clamp (FVAC) applied, then apply firm pressure to the insertion site until bleeding stops (30 to 45 minutes or more as required).
13. Once bleeding has stopped, assess the insertion site for bleeding or hematoma formation before the application of sterile transparent dressing. If site continues to bleed, re-apply firm manual pressure.
14. Once bleeding has stopped, apply transparent dressing. Dressing to remain in place for 72 hours. Date and initial dressing.
15. Discard used supplies in appropriate receptacle.
16. Remove gloves and perform hand hygiene.
17. Assess the puncture site and quality of perfusion to the decannulated extremity immediately after removal and every 15 minutes x 1 hour, every 30 minutes x 2, then every 60 minutes x 4.
18. Document.
19. Limit activity following removal as follows:
    - Place flat pillow under head but do not allow patient to lift head or flex hip x 4 hours.
    - Maintain bed rest with head-of-bed no greater than 30° for 8 hours.

- Reposition every 2 hours; prop pillows to support the patient and maintain alignment.
- Resume normal activity after 8 hours.
- Avoid Valsalva maneuver x 24 hours.

V. EMERGENCY SITUATIONS

A. Cardiac Arrest

1. Switch the trigger to arterial pressure (remove ECG cable from IABP console). Chest compressions trigger IABP timing.
2. Follow Advanced Cardiac Life Support (ACLS) standards.

B. IABP Console or Balloon Failure

1. The IAB should not remain dormant in the patient for longer than 30 minutes. In the event of mechanical failure, separate the pump from the console. If no blood is observed in the gas lumen tubing, manually inflate/deflate the IAB:
   a. Manually inflate and deflate the IAB 8 - 10 times per hour with air, using a volume 10 mL greater than the balloon size capacity (i.e., 50 cc for a 40 cc IAB). A catheter tip syringe is required to fit in the helium line.
2. If blood is observed (dark flecks) within the gas lumen tubing, DO NOT attempt to inflate the IAB. Turn the IABP console off. Clamp tubing and notify the physician immediately for IAB removal.

VI. WEANING

When the physician makes the decision to attempt weaning the patient from the IABP, specific orders for timing changes, assessment criteria, and length of wean need to be written. Usually the patient is weaned by changing the timing from 1:1 to 1:2 and then 1:4 for one to two hours at each interval, as tolerated.

★ Note: 1:4 and 1:8 frequencies with a bradycardiac rhythm may not provide sufficient balloon movement. In this instance, the IABP should be placed back on 1:1 for 5 minutes each half-hour.

Assessment parameters which indicate the patient is tolerating the wean are:

- No angina,
- Heart rate less than 110 beats/minute.
- Absence of unstable dysrhythmias.
- MAP greater than 70 mm Hg with minimal or no vasopressor support.
- Pulmonary artery wedge pressure (PAWP) less than 18 mm Hg.
- Cardiac index greater than 2.4 L/min/m^2.
- Mixed venous oxygen saturation between 60% and 80%.
- Urine output greater than 0.5 mL/kg/hour.

VII. AIR TRANSPORT WITH IABP

Equipment:

- IABP transport securing bracket
- All appropriate cables
- 1 x Full helium tank (extra)
- 1 x Adaptor tubing for Datascope and Transact
- IABP manual for reference
- 1 x Package of ECG electrodes
- 2 x Kelly clamps (heavy)
- 1 x 60 mL catheter tip syringe
- Nonsterile gloves
- IABP Flowsheet (CS-227)

Pre-transport:

1. Inform Medical Air Transport Centre (MATC) that two critical care paramedics must accompany the patient. Refer to policy “Intra aortic Balloon Pump (IABP) Process and Air Transfer (Unit Specific Policy # ICU-14).
2. Inform MATC of equipment and number of staff accompanying patient, so that arrangements can be made in land ambulance and aircraft to accommodate the equipment.
3. Confirm that accepting facility has a bed available and is equipped to receive patient on IABP. If receiving facility is not using an ARROW IABP be sure to take adapter for “Datascope” unit to connect the patient’s IAB catheter to receiving IABP.
4. Ensure clear ECG and AP transducer signals are seen on the IABP screen.
5. Check IABP battery status on screen. A fully charged battery has 14 volts (one battery lasts approximately 2-hours). Do not use IABP for transport if message reads “charging battery LO” or “Battery Charged” light is not lit.
6. Verify adequate helium supply. Pack extra helium tank.

During Transport:

1. Properly secure the IABP in ambulance and in aircraft.
2. Ensure that the IABP console is plugged in whenever possible (in ambulance and aircraft).
3. Maintain alarms in “ON” position at all times.
4. For transfer, if peripheral arterial line waveform is not transduced, visually expose insertion site area and monitor for any disconnection.
5. Position the patient with the head toward the front of the aircraft to decrease preload.
6. Balloon gas volume expansion and contraction will result in alarm conditions such as “High Baseline” during ascent and “Helium Loss” during descent. (Barometric pressure decreases as altitude increases causing the volume of helium to expand).
   a) Both alarm conditions result in the pump going to “OFF” position and venting the system. This may occur every 1,000 ft.
   b) To correct these alarms press “RESET”, then “PUMP ON”.

VIII. CHANGING IABP CONSOLES (TBRHSC to Ornge IABP console)

1. Prior to changing consoles, the Ornge paramedics will prepare console by:
   a. Turn console power on – plug in ECG and AP cables.
   b. Attach ECG electrodes and console ECG cable to patient.
   c. Ensure ECG configuration with optimal R-wave amplitude and absence of artifact.
   d. Ensure console is in AutoPilot mode (default at power on).
2. Press standby on TBRHSC console:
   a. Plug in IAB line to Ornge console.
   b. Connect AP to Ornge console (ECG is already attached).
   c. Level and zero AP transducer (refer to p. 4).
3. Press “ON” (Ornge console will purge then begin pumping). Verify reliable trigger.
4. If patient has FiberOptix catheter:
   a. Record MAP from arterial blood pressure.
   b. Remove FiberOptix slide connector and Cal key from TBRHSC console, connect to Ornge console.
   c. Zero FiberOptix sensor:
      i. Press AP SELECT key, then FOS MAP CAL key.
      ii. Adjust the MAP value (increments of 5 mm Hg).
      iii. FiberOptix icon (light-bulb) will change to white indicating manual zero.

IX. DISPOSAL OF EMPTY HELIUM TANK(S)

1. Place empty helium tank(s) in bin marked *Empty Helium Tanks* in dirty utility room in ICU.
2. ICU housekeeper or designate will deliver empty tanks to housekeeping manager for proper disposal.

X. DOCUMENTATION

- IABP PCS Intervenion:
  - IABP pressures, capillary refill and pedal pulses of lower extremities and site check Q1H.
  - Colour, temperature, movement and sensation of extremities Q4H.
  - Bilateral calf circumferences Qshift and as required (prn).
  - Insertion date, time, serial number, location, size, dressing change and tubing change.
  - Assess helium level and cold trap Qshift.

- ICU Assessment Flowsheet PCS intervention:
  - Record neurological assessment Q4H.

- Record IABP and balloon waveform Qshift and as required. Mount strips on IABP Waveform Strip Record (CS-228)

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