# Guidelines for Management of the Intra-Aortic Balloon Pump

**Purpose:** To outline the nursing management of patients requiring an Intra-Aortic Balloon Pump (IABP). The following guidelines have been prepared to establish a quick reference guide for the safe and effective use of IABP therapy. This guideline will cover assessment, monitoring, and management of patients with the Datascope IABP.

**Guidelines:**

***Setup and Insertion:***

- Explain to the patient and/or family the procedure for insertion and the importance of keeping the affected extremity immobilized while the balloon is in place.
- Insert a Foley catheter.
- Ensure that consent has been signed unless it is an emergent procedure.
- Assess and document baseline vital signs.
- Assess bilateral brachial and pedal pulses. Mark the sites for future assessment.
- Call the Cath lab to obtain the Datascope machine.
- Discuss with provider which size catheter is to be used. Kits of 40cc and 34cc may be obtained from the supply room, on the top shelf of the middle aisle.
- Flush the disposable monitoring tubing with 0.9% Normal Saline and connect to the IABP monitor.
- Level the proximal stopcock to the phlebostatic axis and zero the system. This will be connected to the central pressure line of the IABP after insertion.
- Power on the IABP console.
- Open the Helium tank**.**
- Connect the EKG cable from the IABP console to the patient.
- Check initial IABP settings.
    - Mode – Auto
    - Trigger – EKG (preferred) or Pressure
    - Fill Timing – Auto
    - Gas Loss alarm ON
- Keep pump in standby mode.
- Assist physicians to connect the catheter to the IABP console. Ensure that 3ml is aspirated from the arterial lumen and that the lumen is then flushed with 5ml of 0.9% sodium chloride from the flush bag.
- Connect the helium line.
- Fill the IABP catheter by pressing and holding the FILL button. Look for the auto filling message.
- Once the auto fill message clears, press the start button to begin therapy.

***Assessment and Monitoring:***

- Monitor and document systolic, diastolic, MAP, and diastolic augmentation pressures from the IABP console hourly. Use MAP on IABP to titrate drips.
- Print the EKG strip from the IABP and mount on the back of the flowsheet Q12 hours.
- Auscultate the heart and breath sounds while the IABP is on standby. Limit the amount of time the pump is placed on standby, especially for patients with unstable BP or active ischemia. NEVER allow the pump to be paused for >30 minutes. Ensure that the standby advisory tone is on.
- Monitor pedal and radial pulses on the affected side Q15minutes x 1hour, then hourly. If the balloon moves up or down it could occlude perfusion to those limbs.
- Monitor for signs of limb ischemia (color, sensation, temperature, movement, and capillary refill) Q15minutes x 1 hr, then hourly.

- Monitor urine output closely. If balloon migrates down, renal arteries could be impaired. Notify Provider if urine output is less than 0.5 ml/kg/hr.
- Assess the insertion site for bleeding, hematoma, and signs of infection hourly.
- Assess tubing for any signs of blood or helium leak hourly.
- Ensure a Chest X-ray is ordered and reviewed to confirm placement. A Chest X-Ray should obtained Q24 and PRN if there is concern for malposition.
- Watch for signs of a dissecting aortic aneurysm.

***Documentation:***

- In the invasive line section, document the location of the IABP. Document Mode, Frequency, Trigger, pulses, site assessment, and tubing assessment hourly.
- If there is any significant finding during the circulation assessment, document a description of the assessment and who was made aware of the findings.

***IABP Care:***

- Set the augmentation alarm 10mmHg below the augmented diastolic pressure. The alarm should be on continuously and on maximum volume.
- If the patient is in A Fib, ECG trigger is the desired trigger but pressure trigger may be used.
- If the patient has a pacer, the ECG trigger should still work so long as there is an Rwave. If moving the lead closer to the heart does not make the Rwave more pronounced (and inflation is not occurring approximately after each Rwave consistently), consider Semi-Auto mode and Pacer V/AV trigger. The balloon will then trigger off of the V-spike (must be 100% paced).
- Inspect the pressure bag for volume and proper inflation. Always use 0.9%NS, never Heparin. If patient arrives from OR or OSH with a heparin bag, switch to NS. Change the flush bag Q96hrs.
- Transduce the aortic arterial line (balloon lumen) via Datascope console.
- Check the helium tank level by checking the gauge on the side of the console and replace the tank as needed. When Low Helium alarm triggers, there are approximately 48hours remaining in the tank. Spare tanks are stored in the storage room or can be obtained from the CCU or Cath Lab.
- While changing the helium tank, leave the console on and running. Find the lever on the right side of the console; pull it out away from the machine all the way to free the tank. Grasp the helium tank and unscrew it from the console. Screw in the new tank firmly. Push the lever back in to spike the new tank. Ensure that the helium gauge shows a full tank.
- Never power flush or draw blood from the IABP arterial line. If this is absolutely necessary, obtain an order from the provider. Always place the pump on standby while blood is drawn and line is flushed.
- Never let Povidone-Iodine solution come in contact with the catheter.
- Label the IABP tubing at the insertion site as a reference point for catheter migration.
- IABP frequency to be maintained per physician order.
- IF IABP timing is 1:2 or 1:3, the patient should be receiving systemic anticoagulation.
- Wean IABP per Provider order as follows: Place IABP on 1:2 and 1:3 prior to discontinuing to ensure patient tolerance. Place on 1:1 and turn off anticoagulation before IABP is pulled.
- If the IABP is discontinued, clean the pump, bring it out from the room and plug it in. The Cath Lab staff will come to pick it up.

***Troubleshooting:***

- Never turn off IABP until the provider is ready to remove it. If the IABP console fails, use a 60ml syringe and a stopcock to inflate and deflate IABP Q5mins using 40ml of Helium until a new console is available.
- Report to a provider if blood is observed (rust colored flecks) in the IABP catheter helium line or if a recurrent gas loss alarm occurs.

- Turn off pump immediately if rupture is confirmed and follow procedure for removal with provider. If patient still requires therapy, prepare for emergent travel to Cath lab.
- If the IABP pressure waveform dampens, check all connections and ensure tubing is free of kinks and air bubbles. The IABP may be flushed using pigtail on the transducer or power flushed **only when pump is on standby**.
- If patient on IABP has a cardiac arrest, switch the pump to a pressure trigger mode and decrease augmentation to 50%. **Do Not turn off the pump.** The balloon will inflate and deflate in sync with compressions.

***Patient Care:***

- Keep the patient in supine position with HOB elevated no more than 30 degrees. Reverse trendelenberg should be used.
- Do not flex the leg with IABP catheter. If needed, apply a knee brace.
- Log roll patient from side to side.
- After IABP catheter is removed, ensure that direct pressure is held over the site, either manually or using C Clamp, until hemostasis is achieved.
- Patient should be flat in bed for 1 hour after IABP is removed, and should remain on bed rest for 4 hours...
- Assess the site for hematoma or bleeding and monitor distal pulses of lower extremity Q15mins x 4, Q30mins x 2, and then Q1 hour x 2 after removal.

***Notify Provider of any of the following conditions:***

- Blood in tubing.
- Any vascular changes (diminished pulses, lost signals).
- Augmentation pressure less than 5mmHg above systolic BP.
- Bleeding or hematoma at insertion site or signs of retroperitoneal bleed.
- Drop in hematocrit unexplained by other bleeding sites.
- Abrupt stop in urinary output.
- Any signs of dissecting aorta (sudden or recurrent chest pain, back pain, discrepancy of upper extremity blood pressure).

Adapted from CSICU and revised for the CCU 2/21/2013

Reference:
*AACN procedure manual for critical care.* (5th Ed.). (2005). St. Louis, MO: Elsevier Saunders.