Bladder Pressure and Abdominal Compartment Syndrome

Who needs bladder pressures, how to measure one, IAH grades, abdominal perfusion pressure, nursing measures and when to call

ICU Basics
icubasics.com · checked Nov 2026

WHAT YOU WILL DO

Intra-abdominal pressure (IAP) is the pressure inside the abdomen. You cannot judge it by feel: examination misses about half of high pressures. In the ICU you measure it through the Foley catheter, trend it, and report a rise early, because sustained high pressure squeezes the kidneys, gut, lungs and venous return.

- Screen for risk on admission and when a new organ failure appears; two or more risk factors means a baseline bladder pressure.
- Measure the same way every time: supine, same zero point, same volume.
- Trend the number with urine output, airway pressures, MAP and lactate.
- Carry out the measures that lower pressure, and report early.

Common risk factors: massive fluid resuscitation or many blood products, pancreatitis, major burns or trauma, abdominal surgery or damage control laparotomy, ileus or a distended bowel, ascites or blood in the abdomen, sepsis, obesity, prone position and mechanical ventilation.

MEASURE A BLADDER PRESSURE

1. Use the closed kit on the Foley; prime the tubing and transducer with saline so no air remains.
2. Lay the patient flat (supine) if tolerated, with no abdominal muscle tensing: treat pain, agitation or coughing first.
3. Level and zero the transducer at the iliac crest in the mid-axillary line.
4. Clamp the drainage tubing past the sampling port and instill no more than 25 mL of sterile saline.
5. Wait 30-60 seconds so the bladder muscle relaxes.
6. Read at end-expiration and record in mm Hg with the patient position.
7. Unclamp, let the bladder drain, and subtract the saline from the hour's urine output.

SAFETY Pitfalls that give a false high: head of bed raised (above about 20 degrees adds more than 2 mm Hg), transducer zeroed too low, the patient straining or coughing, more than 25 mL instilled, and reading too soon. Leaving the drainage tube clamped causes retention: always unclamp.

WHAT THE NUMBER MEANS

WSACS 2013. IAH means a sustained or repeated IAP of 12 or more.

IAP (MM HG)	MEANING
About 5-7	Normal for a critically ill adult
12-15	Intra-abdominal hypertension (IAH) grade I
16-20	IAH grade II
21-25	IAH grade III
Above 25	IAH grade IV
Above 20, sustained, with new organ dysfunction	Abdominal compartment syndrome (ACS)

Abdominal perfusion pressure (APP) = MAP - IAP. Many protocols aim for 60 or more; a MAP of 70 with an IAP of 25 leaves an APP of only 45.

NURSING MEASURES TO LOWER THE PRESSURE

- Treat pain and agitation; a tense abdominal wall raises the pressure.
- Avoid head of bed above 30 degrees when IAP is high; ask about reverse Trendelenburg.
- Decompress: nasogastric tube to suction, rectal tube; ask whether to hold tube feeds.
- Loosen tight binders and dressings.
- Avoid fluid overload once resuscitation is done: track the cumulative balance and ask before each bolus.
- Neuromuscular blockade, when ordered, as a short bridge with sedation.
- Measure at least every 4-6 hours while IAH persists, or as ordered.

If the pressure stays above 20 with new organ failure despite these, the team considers drainage of fluid (paracentesis) or decompressive laparotomy, which leaves an open abdomen under a temporary closure, often negative pressure.

CALL FOR HELP WHEN

- IAP 12 or more for the first time, or rising on consecutive readings.
- IAP above 20, or APP below 60.
- Urine output falling despite fluids, or rising creatinine.
- Peak or plateau airway pressures climbing, tidal volumes falling, worsening oxygenation or CO2.
- Hypotension, rising vasopressor needs, rising lactate.
- Tense, distended abdomen, or a rise in ICP in a brain-injured patient.

SAFETY Low urine output with a tense abdomen and a rising bladder pressure is not a reason for another bolus. Report the trend; more fluid can make it worse.

CHECK YOUR UNIT POLICY

Check your unit's policy for: who needs IAP screening and how often, the kit and volume used (many use 20-25 mL), saline temperature, whether to lower the head of the bed for each reading, the IAP and APP values to report, and care of the open abdomen.

Sources (7) are listed with links at icubasics.com/sheets/abdominal-compartment.html. For education and exam preparation only. Not medical advice; follow current guidelines and your institution's protocols. ICU Basics is an independent study aid not affiliated with any certifying body.