TARGET AUDIENCE  ICU Medical and Nursing staff

PURPOSE  Standardised measurement of intra-abdominal pressure in ICU.

GUIDELINE
Intra-abdominal pressure (IAP) is defined as the pressure concealed within the abdominal cavity. In critically ill patients an elevated IAP has been recognised as a cause of significant organ failure, morbidity and mortality.

Intra-abdominal hypertension (IAH) is graded as follows:
- Grade I: IAP 12-15 mmHg
- Grade II: IAP 16-20 mmHg
- Grade III: IAP 21-25 mmHg
- Grade IV: IAP > 25 mmHg

The Abdominal compartment syndrome (ACS) is defined as a sustained IAP > 20 mmHg that is associated with new organ dysfunction / failure.

Risk Factors for IAH / ACS
- Diminished abdominal wall compliance
- Acute respiratory failure, especially with elevated intrathoracic pressure
- Abdominal surgery with primary fascial or tight closure
- Major trauma / burns
- Prone position
- Increased intra-luminal contents
- Gastroparesis and ileus
- Colonic pseudo-obstruction
- Haemoperitoneum / pneumoperitoneum
- Ascites / liver dysfunction
- Capillary leak / fluid resuscitation
- Hypothermia (core temperature < 33°C)
- Polytransfusion (>10 units of blood / 24 hrs)
- Massive fluid resuscitation (> 5 L / 24 hours)
- Pancreatitis

Indications for measuring IAP are any two risk factors, or at the discretion of the Consultant Intensivist.
Measuring IAP

**Equipment:**
1. Abviser Intra-abdominal Pressure monitoring system
2. Normal Saline 1 litre
3. Three-way tap
4. Transducer
5. Sterile drape, sterile gloves and chlorhexidine antiseptic solution

**Procedure:**
1. Spike Normal Saline and prime Abviser tubing, with three way tap connected to transducer.
2. Place sterile drape under patient’s Foley catheter/drain bag connection.
3. Clamp Foley to prevent urine leakage.
4. Prep Foley/drain bag connection with antiseptic solution, then disconnect using aseptic technique.
5. Attach Foley catheter and drainage bag connection to AbViser AutoValve.
6. Un-clamp Foley catheter.
7. Mount transducer to patient or pole at the level of the iliac crest in the mid-axillary line (level of the urinary bladder).
8. Plug cable into ICU monitor that can display CVP or other single pressure channel.
9. Zero transducer at the level of the iliac crest in the mid-axillary line. The patient should be in the supine position before measuring their IAP.
10. Draw 20 mls of saline into the syringe and infuse over 10 seconds into the bladder
11. Record the pressure reading on the monitor at end-expiration. This IAP reading will last approximately 2 minutes, at which point the valve will automatically open and drain. Confirm that the AutoValve has opened and urine is draining normally.
12. Record the infused saline in the observation chart to adjust for proper urine output.
13. Repeat steps 10-14 every 4-6 hours or as required. The Abviser can be left in place for 7 days.

**IAP measurements should be:**
1. Expressed in mmHg (1 mmHg = 1.36 cm H2O)
2. Measured at end-expiration
3. Performed in the supine position
4. Zeroed at the iliac crest in the mid-axillary line
5. Measured 30-60 seconds after instillation to allow for bladder detrusor muscle relaxation
IAH/ACS Management Algorithm

Evacuate intraluminal contents
- nasogastric/rectal tube
- pro-kinetic agents
- enemas/aperients

Evacuate intra-abdominal space occupying lesions
- imaging
- drainage of ascites
- ? surgical evacuation of blood/haematoma/lesion

Improve abdominal wall compliance
- adequate sedation/analgesia
- remove constrictive dressings/eschars
- neuromuscular blockade as temporary measure

Optimise
- avoid excessive fluid resuscitation
- fluid removal through judicious diuresis

If IAP > 25mmHg with new organ dysfunction and is refractory to medical management, consider surgical review.

KEY RELATED DOCUMENTS

Key legislation, acts & standards:
- Charter of Human Rights and Responsibilities Act 2006 (Vic) ¹

REFERENCES


KEYWORDS intra-abdominal pressure, abdominal compartment syndrome

¹ REMINDER: Charter of Human Rights and Responsibilities Act 2006 – All those involved in decisions based on this guideline have an obligation to ensure that all decisions and actions are compatible with relevant human rights.
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