

CRITICAL CARE ORDER SET

Abdominal Compartment Syndrome

ICU management of intra-abdominal hypertension and ACS. Measure the bladder pressure, defend the abdominal perfusion pressure, and unload the abdomen by every medical means — sedation, decompression, fluid removal — while arranging surgery.

Sustained IAP > 20 mmHg with new organ dysfunction is ACS and an indication for decompression. Adapt thresholds to your protocol.

IAH grades · normal IAP 5–7 mmHg

Grade I	12–15 mmHg
Grade II	16–20 mmHg
Grade III	21–25 mmHg
Grade IV	> 25 mmHg

IAH

Sustained **IAP ≥ 12 mmHg**

ACS

Sustained **IAP > 20 mmHg + new organ dysfunction**

01 Monitoring & targets

INTRA-ABDOMINAL PRESSURE MEASUREMENT

- ☐ Measure IAP via bladder — Foley with manometer / pressure-transducer system
- ☐ Measure IAP q4h and PRN with any deterioration

TECHNIQUE Patient **supine**, at **end-expiration**, transducer **zeroed at the mid-axillary line**, instill **25 mL sterile saline** into the bladder, record in mmHg.

RECORD EACH MEASUREMENT

- ☐ IAP; MAP; **APP = MAP – IAP**
- ☐ Urine output

☐ Ventilator parameters (peak / plateau pressures)

☐ Lactate & base deficit

GOALS

MAP
≥ 65
mmHg (individualize)

APP
≥ 60
mmHg

URINE OUTPUT
≥ 0.5
mL/kg/h

VITALS & SERIAL LABS

- ☐ Continuous ECG, SpO₂, invasive BP (if arterial line); vitals **q1h** (more if unstable); strict I/O, daily weights
- ☐ BMP, Mg, Phos **q6–12h**; ABG & lactate **q6h** & PRN; CBC, LFTs, coags daily (or more if bleeding / organ failure)

02 Ventilation & sedation

MECHANICAL VENTILATION (IF INTUBATED)

- ☐ Volume-controlled, VT **6 mL/kg PBW**; PEEP titrated to oxygenation but **avoid excessive PEEP** if worsening venous return / IAP
- ☐ Plateau pressure target < **30 cm H₂O** (may read higher with very high IAP — interpret with caution; transmural pressure matters)

GOAL Sedation here aims to **relax the abdominal wall** and lower IAP — target **RASS -3 to -5** (deeper than usual). Often combined with NMB if IAP ≥ 20 with organ dysfunction and decompression not yet done.

ANALGESIA

- ☐ **Fentanyl infusion** — start **25–50 mcg/h**, titrate 25–50 mcg/h q15–30 min; usual 25–200 mcg/h IV

SEDATION — CHOOSE ONE CONTINUOUS AGENT

Propofol · if hemodynamically stable

- ☐ Start **5–10 mcg/kg/min**, titrate q5–10 min by 5–10; range **5–50**. Watch hypotension, ↑ triglycerides, PRIS

Midazolam · alternative

- ☐ Optional load 1–2 mg IV q5 min (max 5–10 mg); infusion start **1–2 mg/h**, titrate to range **1–10 mg/h**

Neuromuscular blockade · refractory high IAP + organ dysfunction despite deep sedation, decompression being arranged

- ☐ **Cisatracurium** — optional load 0.1–0.2 mg/kg, infusion 1–3 mcg/kg/min to TOF
- ☐ Alt — **vecuronium** 0.1 mg/kg bolus, then 0.8–1.7 mcg/kg/min
- ☐ Ensure **deep sedation & analgesia first**; eye lubrication, DVT & pressure-injury prophylaxis, TOF monitoring

03 Hemodynamic support & perfusion

BALANCE Optimize perfusion **without worsening third-spacing and IAP** — over-resuscitation directly raises abdominal pressure. Favor early vasopressors over repeated large boluses.

FLUIDS

- ☐ If hypovolemic / septic — **balanced crystalloid** (LR / Plasma-Lyte) 250–500 mL IV over 15–30 min, reassess
- ☐ Avoid repeated large-volume boluses once IAP elevated with third-spacing / congestion

VASOPRESSORS — IF MAP < GOAL DESPITE APPROPRIATE RESUSCITATION

- ☐ **Norepinephrine** — start 0.02–0.05 mcg/kg/min, titrate q2–5 min; usual 0.02–1.0 mcg/kg/min to **MAP ≥ 65, APP ≥ 60**
- ☐ Add second-line agent (vasopressin, epinephrine) per ICU protocol if NE requirement high

04 GI decompression & bowel management

LUMINAL DECOMPRESSION

- ☐ **NGT / OGT to low intermittent wall suction** (if not contraindicated); confirm placement; output q1h
- ☐ **Rectal tube** with gravity drainage / low suction for severe ileus or colonic distention

BOWEL REGIMEN — if no suspected obstruction / perforation & stable

- ☐ Senna 8.6–17.2 mg PO/NG qHS (or BID); PEG 3350 17 g PO/NG daily

Significant colonic distention (Ogilvie-like)

- ☐ **Neostigmine 2 mg IV over 3–5 min** — only after excluding mechanical obstruction, on continuous cardiac monitoring, with **atropine at bedside** for bradycardia; typically with GI / surgery involvement

05 Diuresis / fluid removal

WHEN If **volume-overloaded and hemodynamically stable** (adequate MAP/APP, high filling pressures, lung congestion) — modest diuresis can lower IAP by removing third-spaced fluid.

- ☐ **Furosemide** — diuretic-naïve **20–40 mg IV**, reassess UOP in 1–2h; chronic / resistant **40–80 mg IV**
- ☐ Resistant edema — bolus **40–80 mg** then infusion **2–10 mg/h IV**. Goal UOP **~0.5–1 mL/kg/h**; electrolytes q6–12h. HF / cardiorenal → per HF protocols

06 Renal support

- ☐ Maintain **MAP ≥ 65, APP ≥ 60**; avoid nephrotoxins; renally adjust all cleared drugs
- ☐ Oliguria / anuria with rising creatinine, volume overload, refractory hyperkalemia or acidosis → **nephrology for CRRT / IHD**
- ☐ CRRT effluent dose typically **~20–25 mL/kg/h** (per unit standard), adjust for hemodynamics

07 Infection management & source control

EMPIRIC ANTIBIOTICS — intra-abdominal sepsis; tailor to antibiogram / allergy

- ☐ **Piperacillin–tazobactam 4.5 g IV q6h** (or extended infusion 4.5 g over 4h q8h per protocol)
- ☐ Severe beta-lactam allergy — **ciprofloxacin 400 mg IV q12h + metronidazole 500 mg IV q8h**; de-escalate per cultures / ID

SOURCE CONTROL / SURGERY

STAT Acute Care / Trauma Surgery

- ☐ “Evaluate for **decompressive laparotomy** for suspected ACS” — provide IAP values, organ dysfunctions, imaging findings

- ☐ **Interventional radiology** PRN — percutaneous drainage of large intra-abdominal collections / hemoperitoneum (can be definitive for fluid-predominant ACS)

08 Nutrition & glycemic control

- ☐ **NPO** (except meds) until surgical plan clear
- ☐ Once stabilized / decompressed and bowel function allows — **enteral via NG/OG or post-pyloric**, trophic **10–20 mL/h** and advance per protocol
- ☐ Prolonged enteral intolerance (> 5–7 days anticipated, earlier if malnourished) → parenteral nutrition consult
- ☐ Glucose target **140–180 mg/dL** — IV insulin per ICU protocol; POC glucose q1–2h while titrating, q4h when stable

09 Prophylaxis & supportive care

- ☐ **DVT** — enoxaparin 40 mg SC daily (30 mg if CrCl < 30) or UFH 5000 units SC q8–12h; SCDs if anticoagulation contraindicated
- ☐ **Stress ulcer** — pantoprazole 40 mg IV/PO daily or famotidine 20 mg IV/PO q12h (renal adjust)
- ☐ Reposition q2h (as tolerated with devices / wounds); eye lubrication q4–6h if deeply sedated / paralyzed
- ☐ Oral care / chlorhexidine rinse q12h

10 Imaging & consults

IMAGING

- ☐ **CT abdomen / pelvis with IV contrast** (if renal function / hemodynamics allow) — bleeding, bowel ischemia, perforation, abscess, pancreatitis, large-volume ascites
- ☐ Portable abdominal x-ray / ultrasound for serial assessment (bowel gas pattern, free fluid)

CONSULTS

☐ **Acute Care / General Surgery** — STAT if IAP ≥ 20 with organ dysfunction or rapidly rising

☐ Interventional radiology (percutaneous drainage)

☐ Nephrology (worsening renal function / RRT)

☐ Nutrition / dietitian; Infectious Diseases (complex / MDR sepsis)

11 Post-decompression management

After decompressive laparotomy or large-volume paracentesis.

REPERFUSION Watch for **reperfusion hypotension and hyperkalemia** immediately after decompression — patients often vasodilate; resuscitate carefully.

☐ Continue frequent IAP monitoring if abdomen closed but at risk

☐ Close hemodynamic monitoring; adjust fluids aggressively post-decompression

☐ **Open abdomen / VAC** — coordinate dressing changes with surgery; maintain negative pressure per their protocol

☐ Electrolyte & acid–base recheck shortly after decompression

EDUCATIONAL USE ONLY

Not a substitute for clinical judgement. Verify doses, allergies, renal/hepatic function, and contraindications. Decompressive laparotomy is the definitive treatment for true ACS — do not let medical measures delay surgery. Adapt all thresholds and agents to your institutional protocol and the individual patient.

Spreading knowledge
Improving outcomes