

Hemodynamics

- ✓ $MAP = (SBP + 2 \times DBP) \div 3$. $MAP \geq 65$ mmHg is generally required for organ perfusion — a normal systolic does not guarantee it
- ✓ CVP reflects right ventricular preload — **low = hypovolemia, high = overload or right heart failure**. Trends matter more than a single number
- ✓ **Cardiac output = heart rate $\times$ stroke volume**. Cardiac index = $CO \div BSA$
- ✓ Low CO $\rightarrow$ hypotension, oliguria, altered mental status, cool extremities
- ✓ **Pulse pressure = $SBP - DBP$, normally 30–50 mmHg**. **Narrow** — shock, tamponade, advanced heart failure. **Wide** — Cushing response (rising ICP), arterial stiffness

Neurological deterioration

- ✓ **Level of consciousness is the most sensitive indicator** — irritability, delayed responses, new confusion, lethargy, poor attention
- ✓ GCS: 15 alert • 13–14 mild • 9–12 moderate • ≤ 8 severe, airway protection likely needed. A drop of 2 or more points is significant and needs immediate evaluation
- ✓ Sudden confusion in an older adult is delirium until proven otherwise — check infection, hypoxia, medications, dehydration
- ✓ Always check glucose with sudden confusion, seizure, or unresponsiveness

Call rapid response

- ✓ RR < 8 or > 28 • HR < 40 or > 130 • $SpO_2 < 90\%$ despite oxygen • sudden mental status change • staff concern
- ✓ UAP may take vitals, report abnormal findings immediately, assist with oxygen as delegated, assist with CPR
- ✓ RN must assess, interpret, prioritize, give emergency medications, activate the team, evaluate the response

Post-procedure and device complications

- ✓ **Hemorrhage** — increasing drainage, bright red soaking, hematoma, tachycardia, restlessness, falling H&H. **Reinforce the dressing; do not remove the first post-op layer unless directed**
- ✓ **Infection** — fever or hypothermia, increased pain, purulent drainage, redness. **In older adults confusion may be the only sign**
- ✓ **Respiratory** — atelectasis, pneumonia, hypoventilation, PE. Incentive spirometry, reposition q2h, early ambulation, control pain so they can breathe deeply
- ✓ **Absence of expected drainage is as significant as excess**. Assess the client and the device before blaming the equipment
- ✓ **Removal risks** — central line $\rightarrow$ air embolism (occlusive dressing immediately, supine during removal) • chest tube $\rightarrow$ tension pneumothorax (occlusive dressing) • Foley $\rightarrow$ retention (**first void within 6–8 hours**) • epidural catheter $\rightarrow$ hematoma (check sensation and motor function)
- ✓ **Device infections** — central line $\rightarrow$ CLABSI • Foley $\rightarrow$ CAUTI (closed system, bag below bladder, no dependent loops) • ET tube $\rightarrow$ VAP (**HOB 30–45°**, oral care)