Fluid Resuscitation

REFRESHER

RECOGNIZE IT

- Goal: maintain organ perfusion (hemodynamics) and substrate delivery — oxygen and electrolytes — with fluid and electrolytes
- Isotonic: near-equal osmolarity inside and out, no shift — Normal Saline 0.9%, Lactated Ringers, PlasmaLyte
- Hypotonic: lower osmolarity, fluid shifts into cells — ½ NS (0.45%), D5W
- Hypertonic: higher osmolarity, fluid shifts out of cells — 3% Normal Saline

ASSESS

- In shock, maintain MAP of 65 or greater — it increases survival
- MAP = DBP + ⅓(SBP − DBP). Example: 80 + ⅓(120 − 80) = 93

ACT — FIRST MOVES

1. Sepsis bolus: adult 30 mL/kg up to 3 liters; pediatric 10–20 mL/kg
2. Trauma bolus: 1–2 liters
3. Permissive hypotension in trauma: aggressive resuscitation may exacerbate bleeding until hemorrhage is controlled

PEARLS

- Fluid overload harms every system: cerebral and pulmonary edema, pleural effusions, myocardial and gut wall edema, ascites, acute kidney injury
- Overload picture: impaired cognition, increased work of breathing, impaired contractility, malabsorption, salt and water retention

Take Home Message:

Give isotonic fluid to a MAP of 65 or greater (30 mL/kg in sepsis, 1–2 L in trauma); respect permissive hypotension and overload.