

# Crystalloids for Shock Resuscitation



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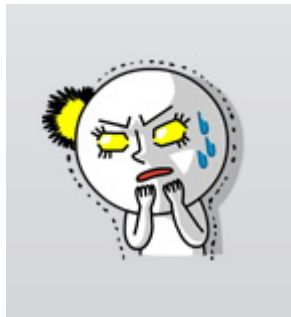


Charles Sidney Burwell, MD.  
Harvard Medical School, Dean  
1935-1949



**Half of what we have taught you is wrong.**

**Unfortunately, we don't know which half !**



**Evidence-based  
medicine**

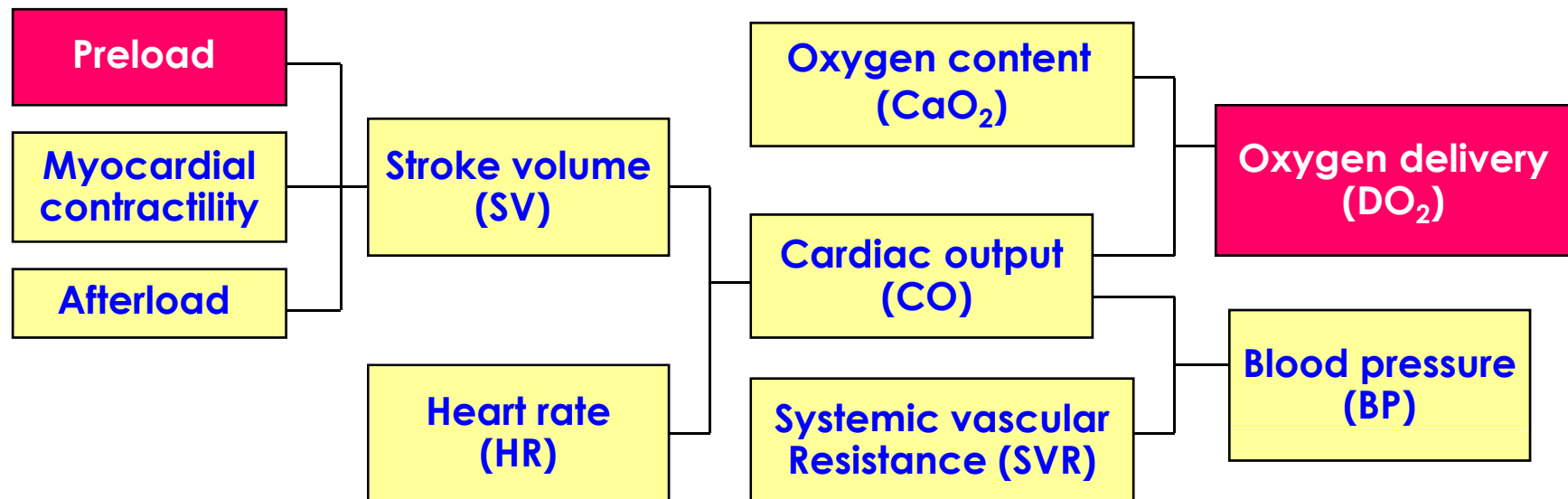


# Crystalloids for shock resuscitation

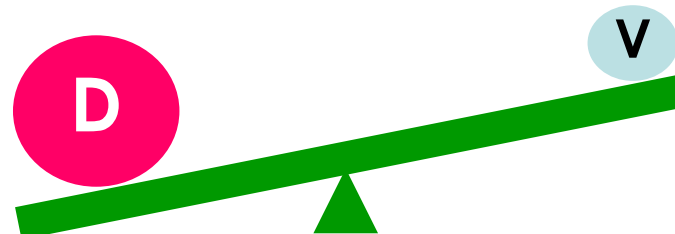
- Physiology of body fluid
- Crystalloids
  - Types and basic components
  - Clinical studies



# Fluid for shock resuscitation



- Hypovolemic
- Distributive
- Cardiogenic
- Obstructive





# Transcapillary filtration

Intravascular fluids



Interstitial fluids

Intracellular fluids

Starling's equation

$$J_v = K [ (P_c - P_i) - \sigma(\pi_c - \pi_i) ]$$

P : hydrostatic pressure

$\pi$  : osmotic pressure



c : capillary / intravascular

i : interstitium