

What is Dehydration?

The other end of the spectrum from oedema

Occurs when water loss exceeds water intake over a period of time and the body is in a negative balance

Caused by decrease of ECF volume - loss of Na⁺ containing fluid from the body

Causes include: vomiting, diarrhea, haemorrhage, burns, profuse sweating, water deprivation, and diuretic abuse

Hemorrhagic shock classification

	Class I	Class II	Class III	Class IV
% Blood loss	Up to 15%	15-30%	30-40%	>40%
HR	Normal	Mild tachycardia	Moderate tachycardia	Severe tachycardia
BP	Normal	Normal to decreased	Decreased	Decreased
RR	Normal	Mild tachypnea	Moderate tachypnea	Severe tachypnea
Urine output	Normal	0.5-1mL/kg/h (min. goal)	0.25-0.4mL/kg/h (markedly decreased)	Negligible
Mental status	Slightly anxious	Mildly anxious	Anxious/confused	Confused/lethargic
Fluid replacement	Crystalloid	Crystalloid	Crystalloid & blood	Crystalloid & blood

Fluid balance

Obligatory fluid loss

Urine (obligatory), Feces, Cutaneous transpiration, Sweat, Expired air

Totals to 1500mL

Required for normal function and health

Facilitative fluid loss

Urine (facilitative)

Totals 1000mL

The ability to adapt to various situations/conditions

A patient should be urinating every 6 hours

Absolute minimum urine output is 30cc/hour

Fluid intake

Performed water (food & drink)

Totals 2300mL

Pathophysiological rationale for shock

Vital signs

Pathophysiological rationale

Increased HR SNS increases HR to maintain CO despite decrease in SV to support perfusion of O₂ to major organs and tissues

Decreased BP Decrease in circulating volume leads to decreased venous return to the heart, decreased preload, decreased SV and decreased CO and compensation for vasoconstriction no longer effective

Skin is pale, cool and clammy Body is attempting to maintain critical systems, so tissue perfusion to the skin is reduced

Hypovolemic shock

Occurs when there is inadequate intravascular fluid volume which leads to inadequate tissue perfusion

Manifestations:

Decreased blood pressure

Increased heart rate, respiratory rate

Pallor, cool, and clammy skin

Decreased urine output

Anxiety, confusion, Agitation

Hypovolemic shock (cont)

Average adult blood volume for a female is 4-5L of blood and 5-6L for a male

Approximately 8% of your body weight is blood

Average blood volume in a 70kg person is 5.5L, so mild loss = 825mL, Class II loss is 825mL-1.65L, and class III is 1.65-2.2L

IV fluids

Crystalloids

Equal to body fluid

Keeps fluid in the intravascular volume without causing a fluid shift from one compartment to the other

Usually used for replacement or maintenance fluids:

Plasma-lyte

Normal saline

D5W

An isotonic solution, in a nutshell, is a balanced water-solute concentration

When a solution is isotonic, it is at equilibrium

Plasma expanders (Colloids):

Albumin

Gelofusine

Colloids are gelatinous solutions that maintain a high osmotic pressure in blood

Particles in the colloids are too large to pass semi-permeable membranes such as capillary membranes, so colloids stay in the intravascular spaces longer than crystalloids

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