

Body fluid compartments

By
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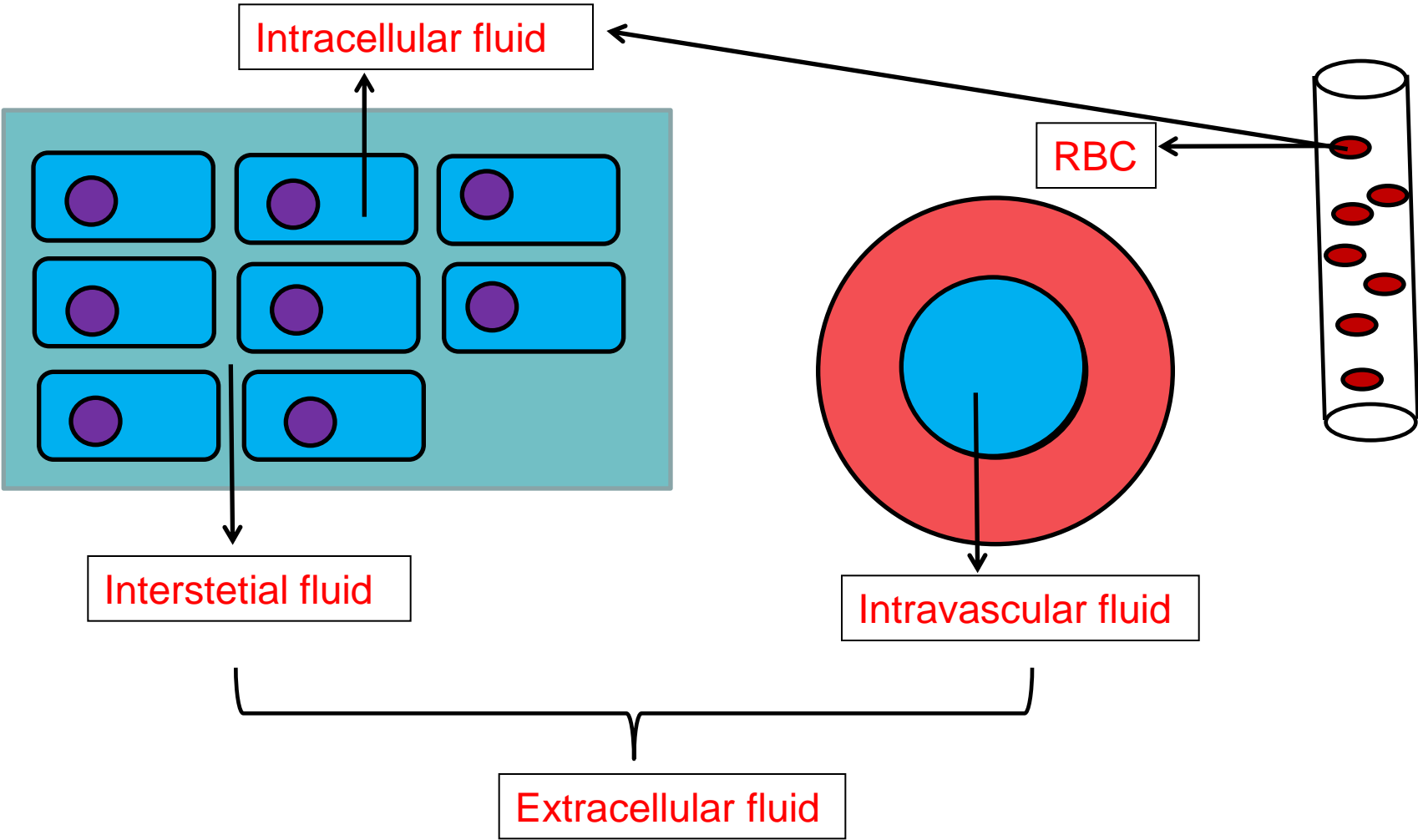
Body fluid compartments

- Most abundant substance present in our body is “water”
- About 60% of healthy human body weight is water
- Water is distributed in different compartments of our body

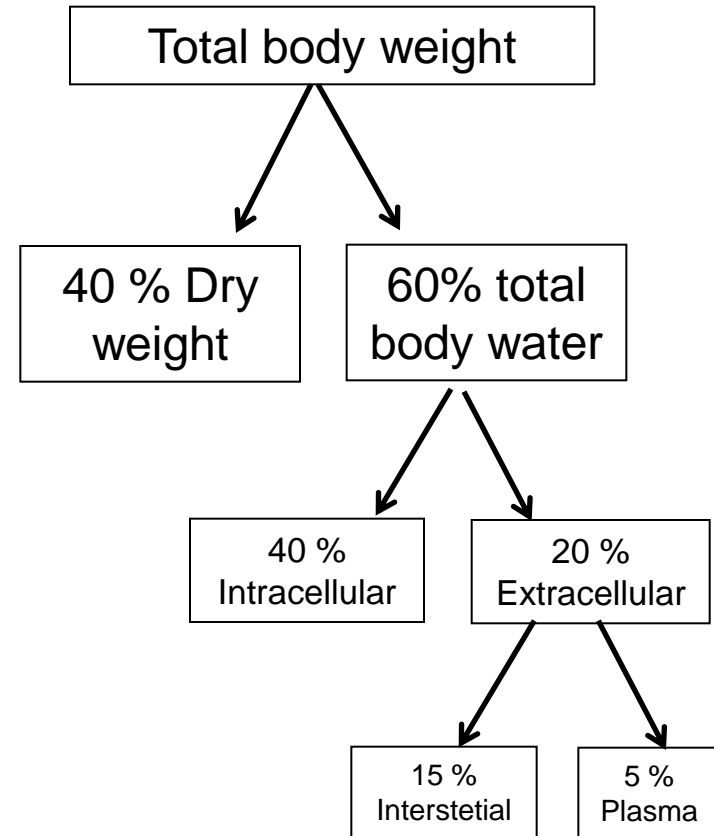
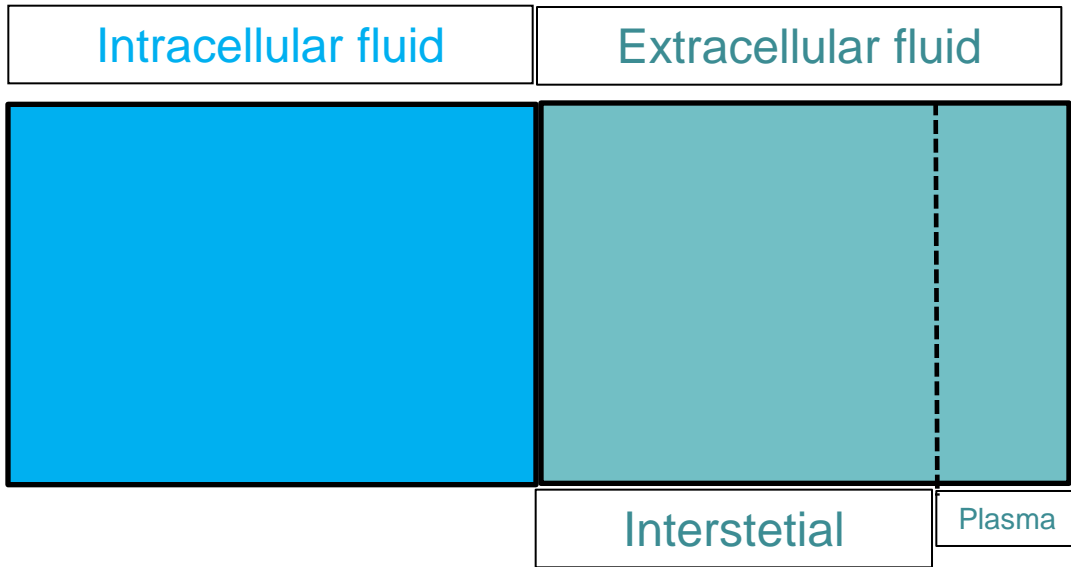
Body fluid compartments

- **Intracellular fluid compartment**
- Is the fluid compartment of the body consisting of all the water present within the cell
- Water is present out of the cells is called extracellular fluid
- Non-circulatory water present around the cells is called **interstitial fluid**
- Circulatory water in the blood is present as plasma

Body fluid compartments



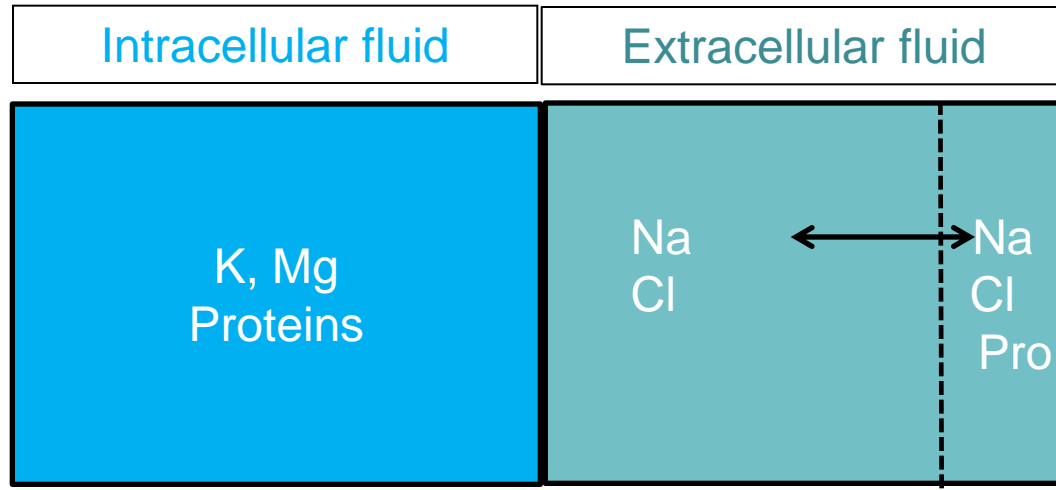
Body fluid compartments



Innate immunity

- **Intracellular fluid**
 - Rich in potassium (K) and magnesium (Mg)
 - Rich in proteins
- **Extracellular fluid**
 - Rich in sodium (Na)
 - Rich in Chlorine (Cl)
- **Plasma**
 - Rich in sodium (Na)
 - Rich in proteins

Body fluid compartments



- Interstitial fluid and plasma are divided by capillary membrane which is permeable to Salts (NaCl) but not proteins
- But cell membrane between extracellular and intracellular fluid is not permeable to Salts but permeable to water

Body fluid compartments

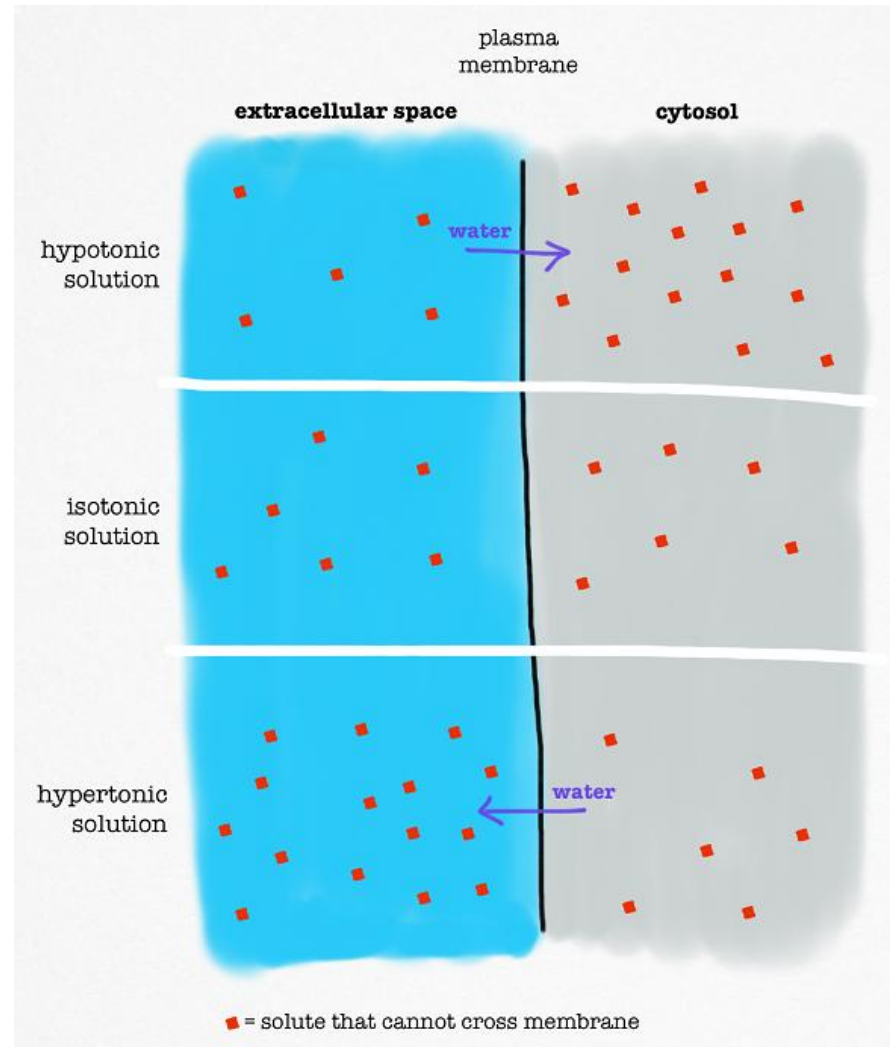
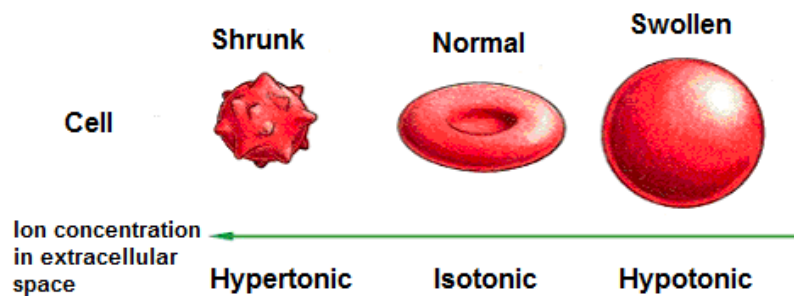
- At steady state osmotic pressure between int.fluid and ext.fluid is constant (nearly 300 mosl/lit)
- Osmolarity of pure water is zero (0)
- Changes in concentrations of osmotically active solute particles effect the equilibrium
- Water shift happens to towards the compartment of high osmolarity
- Volumes of compartments change accordingly

Body fluid compartments

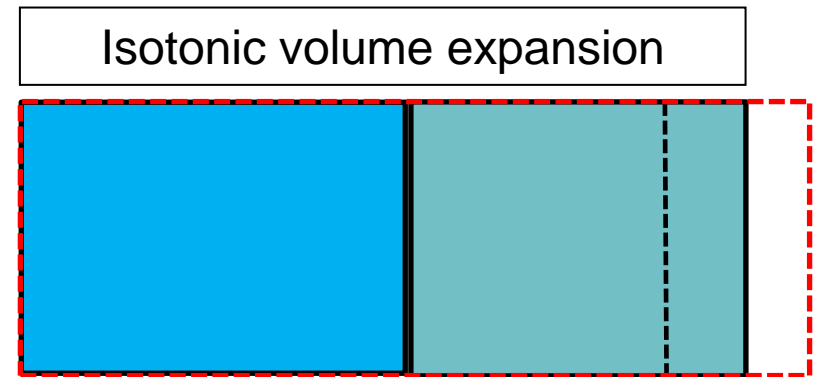
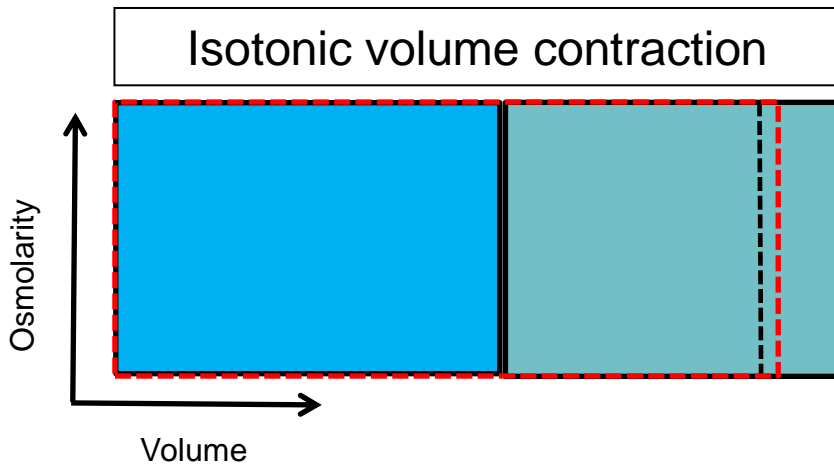
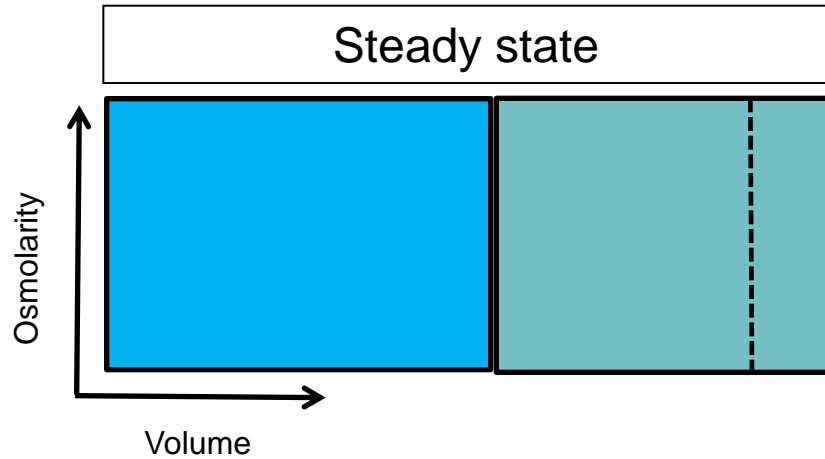
- Volume of ext.fluid compartment mainly depends on osmotically active solute particles
- Concentration of osmotically active particles in a solution are expressed in osmolarity of that solution. (mosl/lit)
- Osmolarity is osmotically active particles / lit.
- Osmolality is osmotically active particles / kg
- For water osmolarity and osmolality are same (1lit of water = 1kg of water)

Body fluid compartments

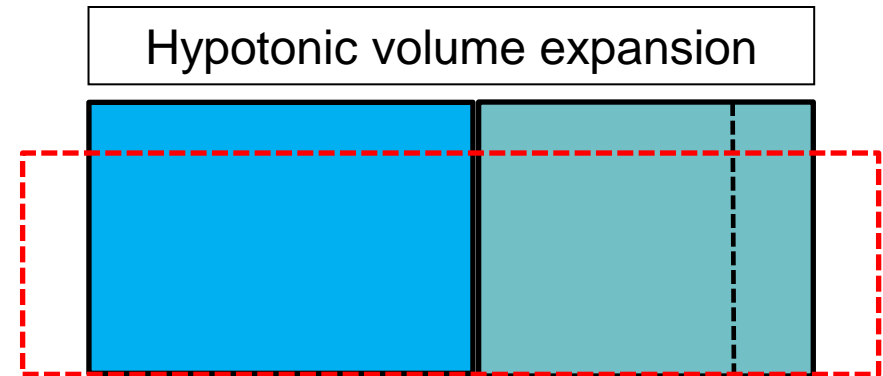
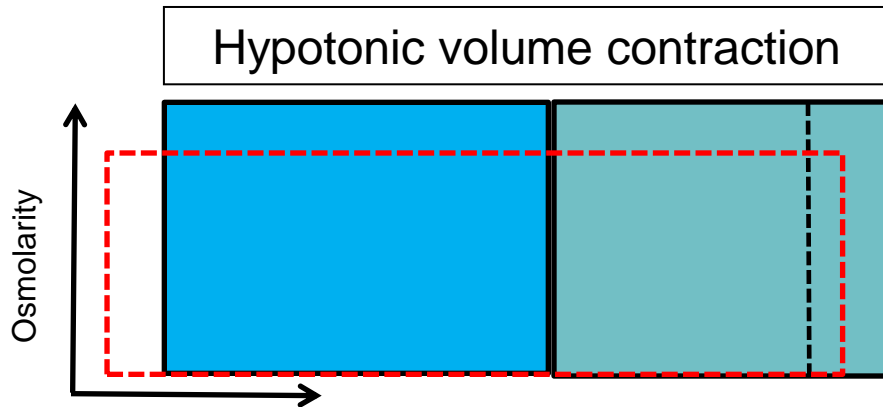
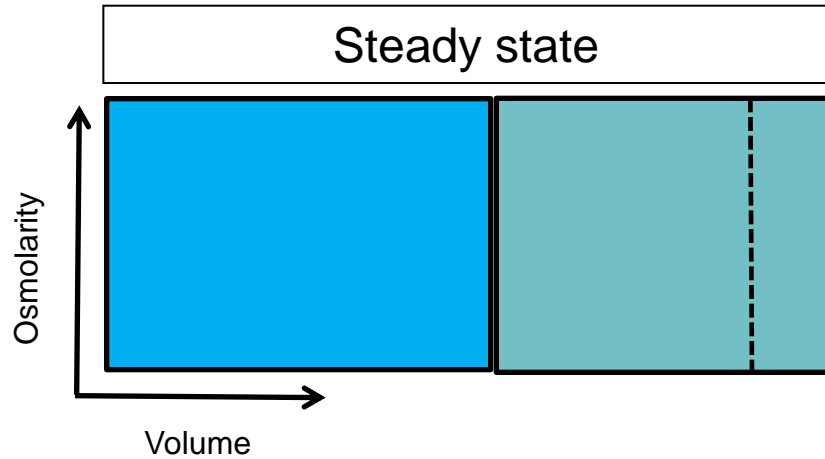
- Osmolarity
- Hypotonic
- Isotonic
- Hypertonic



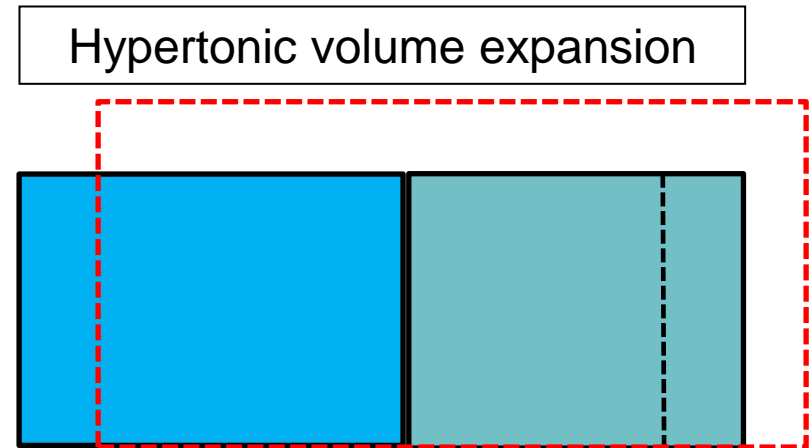
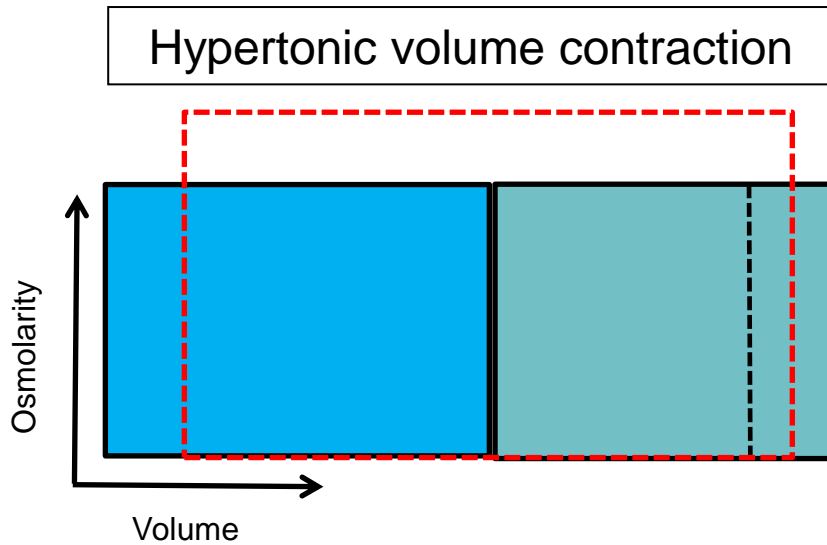
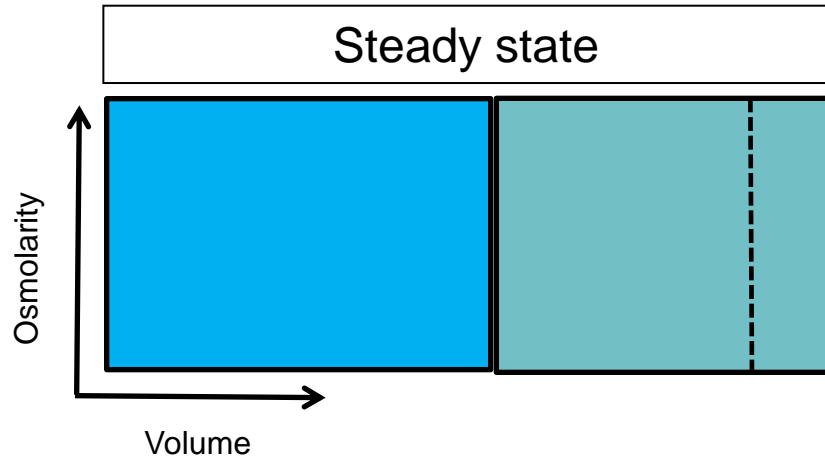
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Body fluid compartments



Body fluid compartments



Body fluid compartments

	ISOTONIC	HYPOTONIC	HYPERTONIC
Contraction	<ul style="list-style-type: none">- Diarrhea- Vomiting- Loss of blood	<ul style="list-style-type: none">- Loss of Na⁺- Adisons disease- Adrenal insufficiency	<ul style="list-style-type: none">- Too much sweat- High grade fever- Diabetes insipidus
Expansion	<ul style="list-style-type: none">- giving normal saline	<ul style="list-style-type: none">- Too much waer intake- Anti-diruretics	<ul style="list-style-type: none">- Salt ingestion

Next class....

- Sample collection and management