

# Osmotherapy

Use of osmotically active substances to reduce the volume of intracranial contents. Osmotherapy serves as the primary medical treatment for [cerebral edema](#).

The primary purpose of osmotherapy is to improve elasticity and decrease intracranial volume by removing free water, accumulated as a result of cerebral edema, from brain's extracellular and intracellular space into vascular compartment by creating an osmotic gradient between the blood and brain.

Normal serum osmolality ranges from 280-290 mOsm/L and serum osmolality to cause water removal from brain without much side effects ranges from 300-320 mOsm/L. Usually, 90 mL of space is created in the intracranial vault by 1.6% reduction in brain water content.

Osmotherapy has cerebral dehydrating effects.

The main goal of osmotherapy is to decrease intracranial pressure(ICP) by shifting excess fluid from brain. This is accomplished by intravenous administration of osmotic agents which increase serum osmolality in order to shift excess fluid from intracellular or extracellular space of the brain to intravascular compartment. The resulting brain shrinkage effectively reduces intracranial volume and decreases ICP.

## Osmotic agents

[Mannitol](#)

[Hypertonic saline](#)

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