

Increased Intracranial Pressure (ICP) Interventions

Intracranial pressure (ICP) is a measure of the hydrostatic pressure in the brain. Three elements contribute to ICP: brain tissue, blood, and cerebrospinal fluid (CSF). When the balance of these elements is disrupted, or when compensatory mechanisms fail, increased ICP can result. Interventions must be taken to reduce intracranial pressure, to prevent life-threatening complications, and death.



PLAY PICMONIC

Interventions

Elevate Head Of Bed

[Elevating Head of Bed](#)

The head of the patient's bed should be elevated 30 to 45 degrees, depending on patient response. The bed should never be flat, as this will cause a further rise in ICP.

Foley Catheter

[Four-leaf Catheter-cat](#)

A catheter may be inserted to monitor urine output.

Mannitol (Osmitrol)

[Manatee](#)

Mannitol is an osmotic diuretic used to decrease ICP. This medication works by creating an osmotic gradient that pulls fluid from brain into the vasculature and provides an immediate plasma-expanding effect that reduces hematocrit and blood viscosity.

High Dose Barbiturates

[High Dose Barbara-doll](#)

Barbiturates may be used in high doses to treat increased ICP that has not responded to other treatments. These medications slow metabolism in the brain, causing a decrease in ICP and cerebral edema.

Passive Hyperventilation

[Pacifier Hiker-vent](#)

When a patient hyperventilates, carbon dioxide will be expelled or blown off. Loss of carbon dioxide will cause a decrease in PaCO₂ leading to arterial vasoconstriction. Vasoconstriction will cause a decrease in cerebral blood flow and cerebral blood volume, thus lowering ICP.

Dexamethasone (Neoplasm or Infection)

[Desk-moth with Tumor-guy and Infectious-bacteria](#)

Dexamethasone or Decadron is only indicated if neoplasm or infection is present. This medication may work to improve cerebral blood flow that has been compromised by increased ICP. As a corticosteroid, it is used to reduce cerebral edema.

Considerations

Neuro Assessment

[Neuron Assess-man](#)

The Glasgow Coma Scale (GCS) can be used to assess a patient's level of consciousness [See GCS Picmonic]. The scale is used to rate the patient's ability to speak, open his/her eyes, and obey commands. The higher the score; the higher the level of brain functioning. PERRLA may also be used to assess neurological function. In this assessment, pupils are expected to be equal, round, reactive to light, and accommodation.

Maintain Normal Temperature

Normal-temp Thermometer

An increase in body temperature can contribute to increased intracranial pressure. Antipyretics or non-pharmacological methods, such as a cool sponge bath should be used to lower the patient's internal temperature. The patient should not be allowed to shiver or shake, as this can increase ICP and increase the oxygen demand of the brain.

Avoid Activities That Increase ICP

Avoid-sign Activities Up-arrow Pressure-cooker

Activities that can increase ICP should be avoided. These activities include suctioning, coughing, vomiting, and compression of jugular veins. Patient care should not be clustered, as this may also cause an increase in ICP.

Intracranial Monitoring System

In-cranium Monitor

A ventriculostomy can be used to continuously monitor a patient's intracranial pressure. In this procedure, a catheter is inserted into the lateral ventricle of the brain, and connected to an external transducer. A pressure reading above 20 mmHg should be promptly reported to the patient's health care professional.