

ICP monitoring for brain injuries



The brain controls all of the body's movement and functions. It allows us to think, learn and remember. When the brain is injured, many of the body's functions may be affected.

What is the treatment for brain injuries?

Treatment depends on the type of injury and your child's condition. The main goals of treating a brain injury are to:

- Stop any bleeding.
- Prevent or control an increase in pressure inside the skull.

Talk with the doctor about treatment options for your child.

What is increased intracranial pressure (ICP)?

The skull is not flexible – it cannot stretch. It is made of hard bones to protect the brain.

After a brain injury, the brain may swell and fill with blood or cerebrospinal fluid (CSF).

- CSF is also known as spinal fluid. It flows inside and around the brain and spinal cord. It acts as a “shock absorber” for the brain.
- Since the skull cannot stretch to hold the extra swelling and fluid, the pressure inside the skull increases. This is called increased intracranial pressure (ICP). Intracranial means inside the skull.

What symptoms could my child have?

Increased ICP can cause 1 or more of these:

- Agitation
- Confusion
- Slow to respond
- Less awareness
- Coma and death
- Headaches
- Vomiting (throwing up)
- Changes in vision
- Seizures
- Changes in pupils responding to light

What is an ICP monitor?

An ICP monitor is a device that measures pressure inside the skull. Your child's doctors can use the readings, along with other tests, to help them decide the best treatment for your child.

In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away.

ICP monitoring for brain injuries, continued

How does an ICP monitor work?

To use an ICP monitor, your child will need a small device placed inside the skull to measure pressure. The device:

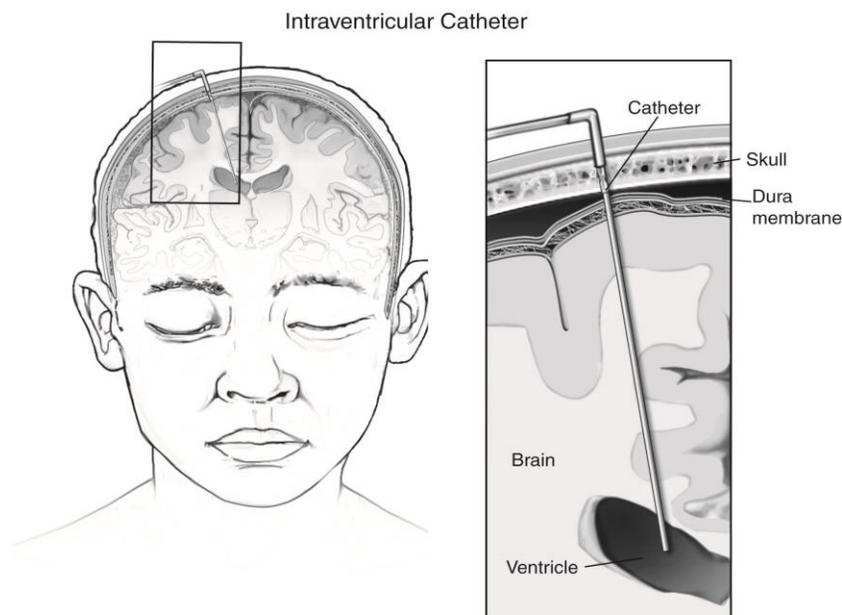
- May be a tube (catheter), sensor or bolt.
- Connects to a recorder or monitor outside the skull.
- May be placed under general or local anesthesia. This depends on the type of ICP monitor your child needs.
 - General anesthesia is when your child receives medicine that causes them to sleep very deeply.
 - Local anesthesia is when the doctor injects medicine into an area using a needle and syringe. It makes the area feel numb.

What type of ICP monitor could my child have?

Two types of monitors are listed below. Talk with the doctor about what type your child needs. Please feel free to ask questions about the ICP monitor and your child's treatment.

Intraventricular catheter

- The doctor places a small catheter or tube inside 1 of the fluid-filled spaces (ventricles) in the brain.
- The tube connects to the monitor to record pressure inside the brain.
 - It also allows excess CSF to drain into a drainage system if needed.
 - Because it drains the fluid to the outside of the body, it is called an external ventricular drain (EVD).

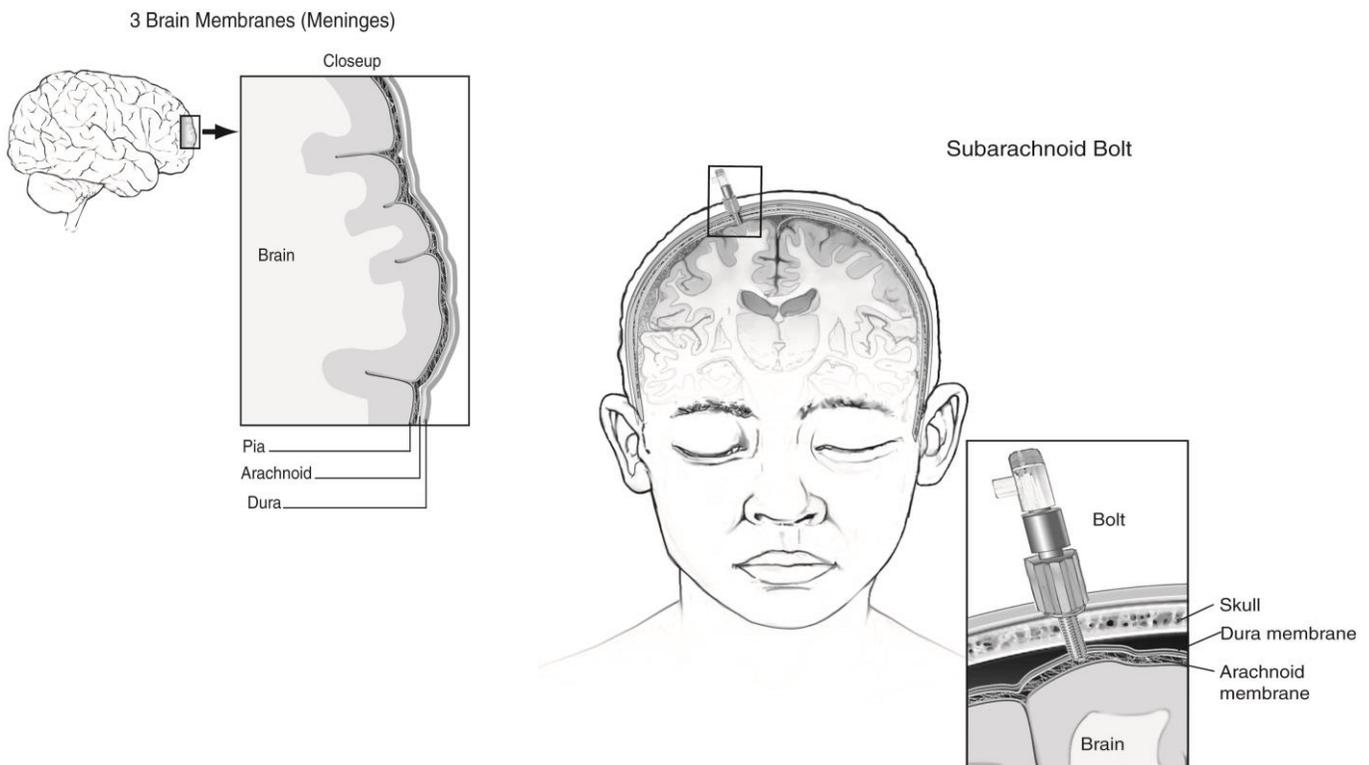


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ICP monitoring for brain injuries, continued

Subarachnoid screw or bolt

- The membranes that surround the brain are called meninges. The arachnoid membrane is the middle membrane on the brain.
- The doctor:
 - Places a hollow, metal screw or bolt into a small hole drilled through the skull. The screw or bolt lies in the space beneath the arachnoid membrane on the brain, or subarachnoid space.
 - Passes a small tube through the bolt into the brain.
- The tube connects to the monitor to record pressure inside the brain.



This teaching sheet contains general information only. Talk with your child's doctor or a member of your child's healthcare team about specific care of your child.

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