Lumbar puncture

This fact sheet is for people who have presented to the emergency department and need a lumbar puncture.

This fact sheet provides general information. If you have specific concerns, speak to your healthcare professional for further information and advice.

What is a lumbar puncture?

A lumbar puncture, sometimes called a spinal tap, is a procedure where a sample of cerebrospinal fluid (CSF) is taken for testing. CSF is the fluid that surrounds the brain (cerebrum) and spinal cord.

In an emergency setting, this test is mainly used to diagnose meningitis, an infection of the meninges. The meninges is the structure that surrounds the brain and spinal cord. Lumbar puncture is also used to diagnose other conditions of the brain and spinal cord, for example, a subarachnoid hemorrhage – a bleed in your brain.

Lumbar punctures can be performed in a non-emergency setting to check for inflammatory or degenerative diseases that affect the brain and spine. These include Alzheimer's disease and multiple sclerosis – a disease of the central nervous system. Early diagnosis of these conditions allows early treatment to begin.

How is it done?

Usually, you lie down on your side with your knees pulled up against your chest. Sometimes it is done with you sitting up and leaning forwards on some pillows. The doctor will clean an area of your lower back with antiseptic. They will then inject local anaesthetic into a small area of skin over a space between two lower spinal bones (vertebrae). This stings a little and then makes the skin numb.

Once the anaesthetic is working, the doctor pushes a needle through the skin and tissues between two vertebrae into the space around the spinal cord which is filled with CSF. Most people do not feel pain, but they may feel pressure as the needle is pushed in. However, some people do have a sharp feeling in their back or leg when the needle is pushed through.

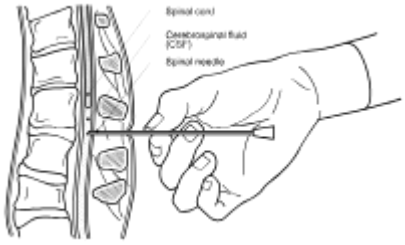
Sitting position



Lying position



Close up



Some spinal fluid flows back through the needle and is collected in a sterile specimen container. If you are being tested for meningitis, this fluid sample is sent to the laboratory to be examined under the microscope to look for germs (bacteria). It is also observed to see if any bacteria grow and what type they are.

The fluid may be tested for protein, sugar and other chemicals, if necessary. Sometimes the doctor will attach a special tube to the needle to measure the pressure of the fluid as it comes out.

The needle is usually in for about three to five minutes. As soon as the required amount of fluid is collected, the needle is taken out and a sticking plaster is placed over where the needle entered.

Side effects and risks

About 20% of people develop a headache after the test. This usually stops within a few hours. After the test, it is best to lie down for a couple of hours as this lessens the chance of a headache. In a small number of people, the headache can persist and they may need additional treatment. Some people may have other problems, such as infection or bleeding where the needle entered. But these problems and any damage to the spinal cord or brain due to a lumbar puncture are rare.