

# East of England Neonatal Operational Delivery Network

## **Parent information leaflet: lumbar punctures in newborns**

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East of England  
**Neonatal**  
Operational Delivery Network

Collaborative working to deliver high quality care to our babies and their families

# Parent information leaflet: lumbar punctures in newborns

## *What is a Lumbar Puncture?*

A lumbar puncture is a commonly performed procedure in which a sample of fluid is collected from the base of the spine. This fluid is called cerebrospinal fluid (CSF). CSF circulates around the brain and down the spinal cord. Obtaining a sample of CSF allows us to perform tests in order to diagnose or rule out certain medical conditions.

## *Why does my baby require a lumbar puncture?*

Babies who are suspected of having an infection commonly require a lumbar puncture. This is because we need to rule out an infection around the brain and spinal cord called neonatal meningitis. We perform the lumbar puncture if a baby's infection markers are high, if their blood culture has shown an infection in the bloodstream or if we are worried that they appear unwell.

Less commonly, we need to perform a lumbar puncture for other reasons. Your doctor will talk to you about this.

## *What is neonatal meningitis?*

Neonatal meningitis is a condition in which there is inflammation of the outer layers of the brain and spinal cord, which usually protect these structures from infection and injury. It affects babies up to 28 days old. The most common cause of neonatal meningitis is a bacterial infection.

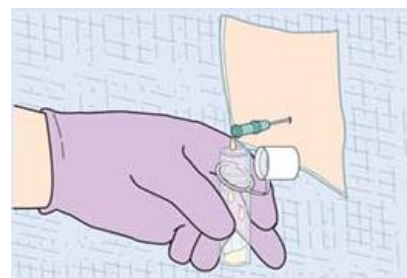
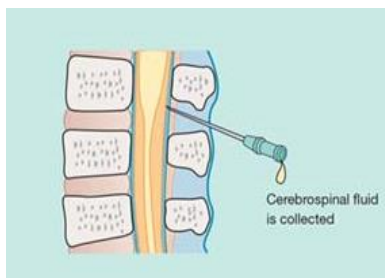
Neonatal meningitis is rare. It affects around 3 out of every 10,000 babies.

Meningitis can be dangerous if it is not detected early or treated fully. We therefore need to perform a lumbar puncture in order to know which babies need treatment for suspected meningitis.

## *What does the procedure involve?*

A lumbar puncture involves inserting a small needle between the vertebrae (back bones) at the base of the baby's spine into a fluid-filled space around the spinal cord.

- The baby will be held on their side in a ball (similar to the position they were in before they were born) so that the gaps between the vertebrae widen
- The lower back is cleaned thoroughly
- The doctor or advanced nurse practitioner inserts a fine needle between the vertebrae
- Drops of CSF are collected into bottles
- The needle is removed and a plaster is applied
- The samples of CSF are sent to the laboratory for analysis



### *Are there any risks of a lumbar puncture?*

As with any procedure, there are a few risks that you need to know about.

<i>Risk</i>	<i>Explanation</i>
<i>Unsuccessful procedure</i>	The most common risk is that we are unable to collect a sufficient sample of CSF to send to the laboratory or the sample is blood-stained rather than clear, which means it sometimes cannot be used. This could mean we need to repeat the procedure, either straight away or at a later date.
<i>Discomfort / pain</i>	Babies may find the lumbar puncture uncomfortable and do often cry. However, it is a relatively quick procedure and we can give them sucrose (sugar water) or expressed breast milk (if available) as well as a dummy or gloved finger to suck - both of which have been shown to distract from and relieve pain in infants.
<i>Bleeding</i>	Sometimes there is a small amount of bleeding if one of the tiny blood vessels around the spine is hit by the needle. This can lead to a blood-stained sample of CSF. A small plaster and some pressure is applied to stop any bleeding.
<i>Infection</i>	As with any procedure, there is a very small risk of infection. However, we take strict precautions to prevent this, such as wearing a sterile gown and gloves, a mask and cleaning the skin thoroughly. Studies quote this risk as clinically insignificant meaning that it is incredibly rare (less than 1 in 100,000 babies).
<i>CSF leak</i>	There may be a small leak of CSF from the space around the spinal cord into the surrounding areas. This is reported in adults but almost never in infants.
<i>Nerve damage</i>	The risk of damage to the nerves in or around the spinal cord is also extremely low. This is because we perform the procedure at the bottom of the spine, beyond the point at which the spinal cord has ended.

### *Can parents / relatives be present during the procedure?*

Whilst you are welcome to remain with your baby during the procedure, parents often find it distressing to watch their baby have a lumbar puncture and we recommend that family members are not present.

If you do choose to be present, you may wish to comfort your baby by speaking calmly to them. You may be able to let them suck your finger or a dummy, with a small amount of sucrose (sugar water) or expressed breast milk (if available) although this might not be possible due to the requirements to hold them still in tightly curled up position. As mentioned above, these things have been shown to distract from and relieve pain in infants. You will be required to wash your hands and wear an apron and gloves.

If you would prefer not to be present, a member of staff can offer comfort to your baby in the same way. The procedure is short and you can be with your baby as soon as it is complete.

### *Can I decline a lumbar puncture?*

A lumbar puncture is the only way of diagnosing meningitis, which means that it is an important procedure to perform. If you do not want your baby to have a lumbar puncture, we may need to treat your baby as presumed meningitis, which means a prolonged stay in hospital and longer course of antibiotics (up to 2 weeks) with your baby possibly needing multiple cannulas.

### *How long will the results take to come back?*

The first result will be back within a few hours of the procedure. This tells us how many white blood cells (infection-fighting immune cells) are in the CSF. If the number of white blood cells is raised, it suggests that there may be a meningitis. If the number of white blood cells is low and your baby is well, it tells us that there is almost certainly no meningitis.

As explained above, occasionally there is blood in the sample, which can prevent an accurate result and which may mean the test needs repeating.

The final result is a CSF culture. This incubates the CSF for up to 6 days to see if any bacteria grow. However, if your baby had certain antibiotics before the lumbar puncture, this result may be less useful than the cell count and we may not need to wait for it.

If your doctor wants to run any other tests they will discuss this with you.

### *What do the results mean for my baby?*

There are three possible outcomes from the lumbar puncture:

- a) If meningitis is confirmed, your baby will need at least fourteen days of intravenous antibiotics. We may need to add a second antibiotic or change antibiotics to cover for all bacterial causes of meningitis. We may need to add an antiviral medication to cover for possible Herpes infection. Occasionally, babies will need an even longer course of antibiotics.
- b) If meningitis is excluded, the duration of antibiotics depends on your baby's blood results and their examination findings.
- c) If the lumbar puncture is unsuccessful or inconclusive, your doctor will decide whether to repeat the procedure or treat as presumed meningitis (because we have been unable to confidently rule this out).

### *What happens if my baby is found to have meningitis?*

Most babies who are treated for meningitis make a full recovery without any long-term consequences. This is particularly the case for babies who appear well but who have had treatment for meningitis based on blood and CSF results alone. Some babies do become poorly with meningitis and there may be more long-term effects of this. Your doctor will discuss this with you.

We will offer your baby a specialised hearing test after discharge due to the small risk of hearing impairment following bacterial meningitis. We will also see your baby in outpatient clinic after discharge.

**If you have any questions about what you have read here, please do not hesitate to speak to your doctor, nurse or midwife.**