The following booklet has been generated by Chris & Nick as an accompaniment to your injection(s) and aims to provide you with relevant information. Other booklets in this series (www.thebackdoor.org.uk) have been accepted very well so far by our patients and the feedback is globally positive. If you find any grammatical errors, or indeed feel that any areas could be improved upon, then we would actively encourage you to highlight these to Chris who can be found in the main office with Nick’s secretaries.

The information contained within the booklet is aimed at explaining your injection treatment and the immediate details surrounding this. For those of you who want to learn more in depth about different aspects, such as the anatomy involved in your condition, we would advise you to visit our website the address of which can be found on the back cover.

Thank you for your help.

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On the 3rd of November 2009 our educational website was launched. Although there are many websites in existence regarding the spine, their contents can vary from excellent to extremely poor, even damaging. We aim to provide a ‘safety net’ for you having reviewed hundreds of sites and building in links to what in our opinion are the most appropriate sites to accompany our own information. All of our information booklets are available in ‘pdf’ format from the site should you need a replacement.
Anatomy

The human spine is made up of 33 bones (Vertebra) all stacked on top of each other. There are 7 neck bones (Cervical), 12 upper back bones (Thoracic) and 5 low back bones (Lumbar). There are also 5 bones in the Sacrum (back of pelvis) and 4 in the Coccyx (tailbone), but unlike the others, these are normally fused and don’t move.

The vertebra has a large body at the front (Vertebral body), with a channel directly behind it (Vertebral/Spinal canal), encased by an arch of bone called the Lamina which is connected via the pedicle. These are all held together with ligaments and stabilised further with muscle.

• Epidural Space: The space between the back of the vertebral canal and the spinal cord
• Facet Joints: A pair of small weight bearing joints which join the vertebra together allowing movement and providing stability
• Hindbrain: Collectively the Pons, Medulla and cerebellum at the base of the brain that function together to support vital bodily processes.
• Neuroforamen: The bony gap at each side of the vertebra through which the nerve roots pass
• Lumbar: A term referring to the area from where the spine joins the pelvis, to the fifth vertebra up
• Neurological Symptoms: Abnormalities such as pins and needles, numbness or muscular weakness caused by nerve related injuries
• Oxygen SATS: Level of Oxygen present in your blood
• Sacrum: The back portion of your pelvis that joins to your lumbar spine
• TED Stockings: A tight ‘sock’ that helps to prevent DVT’s with prolonged reduced mobility
• Thoracic: A term referring to the area of spine between your lumbar and cervical regions
• Vertebra: One of 24 bones within your moveable spine which make up the spinal column
• Vertebral body: The large bony area that makes up the front of your vertebra
• Vertebral canal: The channel behind the vertebral body where the spinal nerve travels
• Vertebral Disc: Sits between the vertebra to help with movement and acts as a shock absorber.
**What Are The Possible Side Effects/Complications?**

**Haematoma** - Bleeding can occur around the spine but this is rare, however is of greater risk in people with clotting disorders or those on blood thinning medication (i.e. Warfarin, Aspirin, Clopidogrel). These people should make it clear prior to the procedure as temporary changes in medication may be needed.

**Nerve Damage** - The risk of permanent nerve damage is very small.

**Anaphylaxis** - Severe allergic reaction to the injection mixture. You should inform the consultant of any allergies.

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**Glossary**

- **Adhesions**: Scar tissue formations commonly seen in sites of chronic inflammation
- **Cerebro-spinal fluid**: The lubricant within the Dura that surrounds the spinal cord
- **Cervical**: A term referring to the area from the base of your neck to the base of your skull
- **Coccyx**: Your tail bone
- **Degenerative**: Naturally progressive deterioration of a structure/function over time
- **Dura**: The fine coating that encompasses and protects the spinal cord
- **DVT**: Deep Vein Thrombosis, a blood clot, known for its formation in the back of the calf muscle
- **ECG**: Electrocardiogram, checks the electrical workings of your heart

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The vertebral canal acts as a clear passageway and protective surrounding for the spinal cord and other delicate structures such as blood vessels to navigate the spine. The cord sits within a further fluid filled protective sheath called the Dura. The fluid acts as a shock absorber but also helps to filter any metabolic waste away from the nervous system. The same system also surrounds the brain and the Cerebro-Spinal Fluid freely circulates. Outside the Dura within the bony spinal canal there is a protective fat layer called the Epidural space.

We describe each level of the spinal cord as a segment and each of these segments gives rise to a pair of nerves, one on each side, that correlates to the vertebral level from under which it emerges. *i.e the L5 nerve root exits under the L5 vertebra.*

The Neuroforamen is a bony cavity created by the stacking of two vertebra upon one another and provides the opening for each nerve root to exit from the vertebral canal. In a healthy non-symptomatic person this opening is sufficient to allow unimpeded travel of the nerve root.
A common misnomer regarding the spinal cord is that it extends down to the base of the spine, terminating somewhere about the join with the pelvis. This is quite untrue with the termination being 4-5 inches above the base of your spine at what we call the L1 or L2 vertebra. This is important to understand in the context of these procedures because the pain you are feeling is thought to be originating from an irritation to part of your nervous system.

Common causes of this often inflammatory based process are disc degeneration, spinal stenosis and Spondylolisthesis which can occur at any spinal level although practically are most commonly seen in the neck and lower back. Many of these are self limiting when low grade but may leave residual swelling or tissue irritation. This can lead to the formation of tissue adhesions, a form of scarring within the spinal canal and epidural space. This may also be caused by prior trauma or surgery.

The increased distance travelled by the lumbar nerve roots with out the protective Dura also makes them more susceptible to these adhesions and can prevent the normalised free movement associated with the nerves. Dependant upon the structures being irritated, this can lead to symptoms such as local back, buttock, leg pain and pins and needles/numbness. Therapists will often try to address this problem with ‘nerve glides’ or ‘flossing’ but this is not always successful.

Your long term goal should be to a return to full normal activities. It is important however not to overdo uncustomed exercise too quickly, which is often found in patients where long existing pain has suddenly gone or been significantly reduced. In some cases, it may be necessary to repeat the injections if the pain returns to above 50% of the pre injection level. This should NOT be viewed as a failure, but simply the need for another ‘enabling’ procedure. YOU are responsible for doing the hard work, we do the easy bit!

**What Are The Possible Side Effects/Complications?**

**Soreness and/or Bruising** - around the injection site is normally self limiting over a few days and easily controllable with painkillers by you.

**Worse pain** - Some people may have temporary increases in pain after the surgery. Although the causes may be numerous a common origin is that of local muscle spasm and this will settle on its own after a few days.

**Steroid Effects** - There are very few side effects with single or occasional use of steroid injections in this way. Common side effects include hot flushes, nausea, mild abdomen pain and temporary menstrual irregularities. Diabetics need to be aware that steroids can raise blood sugars for a few days so it is important to monitor their status.

**Infection** - Any invasive procedure carries a risk of introducing infection however this is rare and is minimised by using sterile techniques.

**Facial Hair** – It is possible for some females to develop some facial hair following the injection of cortisone lasting 6-8 weeks.
After The Procedure?

You will be transferred to the recovery room for a short time after, before returning to the ward. It is possible that for the first 24 hours one or both of your legs may feel very wobbly or numb due to the injection. Although you will be able to get out of bed and walk soon afterwards this should not be done without assistance for the first few times. It is normal to feel like you walk with a limp for the first day or so. You should arrange for someone to pick you up from the hospital as it is inadvisable to drive afterwards for a period of 24 hours. You will normally be able to leave the hospital 2-3 hours after your injections as long as you are mobile and have passed urine.

The most important part of your recovery is working towards returning to normal activities. Day one post procedure should be considered a rest day, however this should be interpreted as undergoing light activities and keeping moving, not being glued to a chair or your bed. Day two should be returning to more ‘normal’ activities like those you were doing prior to the procedure and undertaking a few short walks. Day three should be the start of your physiotherapy if necessary. Due to the busy nature of physiotherapy clinics, it is strongly advised that you book your initial session for day 3 prior to undergoing your procedure.

There is a strong consensus amongst spinal practitioners that this procedure is NOT curative, nor is it the answer to your pain on its own. More often than not, your pain is preceded by muscular weakness and tightness within your spine and incorrect movement patterns. The aim of the injections is alleviate the pain that is preventing you from functioning normally. This then allows you a window of opportunity to gain long term benefits from subsequent rehabilitation.

What Does the Procedure Involve?

Epidurogram

This is a simple and quick diagnostic test undertaken as a day case procedure to look at the nerves and epidural space. A small needle is placed in the neuroforamen (seen to the right) under X-Ray guidance. A small amount of contrast agent is then injected followed by a series of X-Ray like pictures. The contrast disperses up and through the epidural space outlining the nerve roots as they travel to the spinal cord revealing any dense scar tissue that may be in situ. It is important for us to see these structures to help build a diagnostic picture and it also allows us to mimic the injection of medication demonstrating where it would naturally spread to. This is vital as excessive scar tissue may affect the distribution and uptake of any drugs injected thus impacting its effectiveness.

Nerve Root Block

This is normally undertaken following an Epidurogram and uses the same in situ needle to deliver a mixture of Local Anaesthetic (LA) and Cortisone (anti inflammatory) to ‘sooth’ any irritation to the nerve roots at their exit from, and journey through, the spinal canal. This mixture allows an immediate period of pain relief which may last up to 72 hours before slowly receding due to the LA. Somewhere between 7-10 days post injection you will then see the effect of the Cortisone kick in and this can remain effective for much longer often lasting several months.
Many of you will have seen Nick after the failure of conservative management such as Physiotherapy or Osteopathy. If he feels the origin of your pain has occurred due to a biomechanical problem such as poor posture, muscular weakness or spinal stiffness, he may ask you to continue with one of these treatments.

As with all our injection therapies the goals should always been seen as two fold:

1) **Diagnostic** – *If we inject a level of your spine and your pain ceases then we can theorise that this was the ‘pain generator’. Unfortunately because there are many pain generating structures within the small area where the injection is applied, we can only surmise the level from which your pain came, not the type of tissue specifically.*

2) **A window of opportunity** – *For most of you this will arguably be the most important aspects of the treatment as it will remove the pain inhibition that prevented you from successfully completing your rehabilitation previously. Be warned however that once the injection wears off, not addressing any obvious causes of mechanical weakness and imbalance may increase the chances of your pain returning.*

**The Procedure**

You will be admitted to hospital for ‘day case surgery’ however your stay may well only need to be a few hours. Before your procedure, you will be seen and assessed by a nurse. You will be asked to complete a Pre-Admission Questionnaire. A nurse will take your pulse, blood pressure, respiratory rate and temperature. As of May 2009, changes in the law mean that you now also need to be swabbed for MRSA prior to your admission.

If any of these are abnormal your procedure may be cancelled pending further investigation and treatment. The procedure will have been explained to you by Nick and you will be given the opportunity to ask any questions before signing a consent form. You will then be required to change into your hospital gown.

**Theatre**

The injections are performed under sedation in the operating theatre, where you will be lying face down on the operating table. You will be made comfortable by the theatre staff. A canula is placed in the back of your hand, to administer sedation (medication for relaxation) and anti-nausea drugs if required.

Your back will be sprayed with antiseptic to help prevent infection. Nick will then use bony landmarks to identify the levels at which the injections are required. The needle is placed over the area but without puncturing the skin and an x-ray taken using an ‘image intensifier’. This subjects you to a much lower radiation dose than the normal X-Ray machines. When the needle is lined up correctly, it is inserted. Another x-ray is then taken to confirm the correct positioning and then the Nick will move on to the next one, if necessary. Once all of the needles have been placed and checked, either the contrast or medication will be administered depending on your own circumstances.

You will have a small dressing on your back to cover the procedure site that may be removed after 12 hours but do not worry if it should fall off sooner.