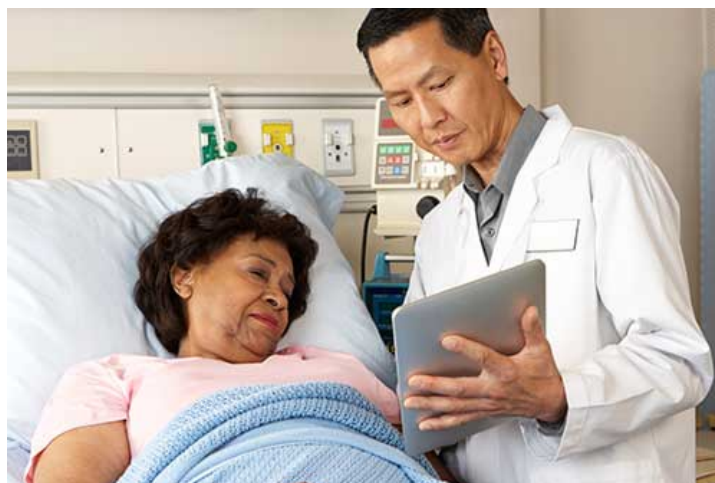




## Epidural Injections

An epidural injection provides temporary or prolonged relief from pain or inflammation in the spine or extremities. Imaging guidance may be used to place the needle in the right location for maximum benefit. The injection may also help confirm the exact site of the pain generator.

Your doctor will instruct you on how to prepare and advise you on any changes to your regular medication schedule. You may be told not to eat or drink anything several hours before the procedure. Tell your doctor if there's a possibility you are pregnant. Leave jewelry at home and wear loose, comfortable clothing. You may be asked to wear a gown. Plan to have someone drive you home afterward.



## What is an Epidural Injection?

An epidural injection is an injection of medication into the space around the spinal cord, also known as the epidural space, to provide temporary or prolonged relief from pain or inflammation. The epidural space is the outermost part of the spinal canal, located outside the dural membrane. Steroids, anesthetics and anti-inflammatory medications are typically delivered in an epidural injection. The injection may reduce pain and swelling in and around the spinal nerve roots, as well as around damaged nerves which in time may heal.

Imaging guidance, such as fluoroscopy or computed tomography (CT or "CAT" scan), may be used to help the doctor place the needle in exactly the right location to target the specific area causing the pain so the patient can receive maximum benefit from the injection.

## What are some common uses of the procedure?

An epidural injection is one of many methods doctors use to relieve pain, along with physical therapy, oral medications and surgery if a patient is not responding to conservative treatments.

An epidural injection may be performed to alleviate pain caused by:

- A herniated or bulging disk that impinges nerves causing pain
- Spinal stenosis
- Post-operative "failed back" surgery syndromes (chronic back or leg pain after spinal surgery)
- Other injuries to spinal nerves, vertebrae and surrounding tissues
- Bone spurs

## How should I prepare for the procedure?

You will receive specific instructions on how to prepare, including any changes that need to be made to your regular medication schedule.

You may be instructed not to eat or drink anything for several hours before your procedure to prevent you from having an upset stomach following the injection or because some centers may offer sedation during the procedure.

You may be asked to wear a gown during the procedure.

You will probably be asked to use the restroom before the procedure.

You will then be positioned on your stomach or side on a special fluoroscopic or CT table that will give the doctor easy access to the injection site(s). A nurse and/or technologist will help to make you as comfortable as possible, both during and after the procedure.

You should plan to have a relative or friend drive you home after your procedure.

## What does the equipment look like?

The injection itself will be administered with a syringe much like one that would be used for a routine vaccination. The doctor will fill the syringe from a small vial of medication. The type of medication used depends on individual patient needs.

The imaging guidance used, such as fluoroscopy or CT, will require additional equipment around the table. Both types of imaging are painless and involve the use of x-rays to obtain essential images that allow the physician to place the needle in exactly the right location of the area of interest for the injection.

The equipment typically used for this examination consists of a radiographic table, one or two x-ray tubes and a television-like monitor that is located in the examining room. Fluoroscopy, which converts x-rays into video images, is used to watch and guide progress of the procedure. The video is produced by the x-ray machine and a detector that is suspended over a table on which the patient lies.

The CT scanner is typically a large, box-like machine with a hole, or short tunnel, in the center. You will lie on a narrow examination table that slides into and out of this tunnel. Rotating around you, the x-ray tube and electronic x-ray detectors are located opposite each other in a ring, called a gantry. The

computer workstation that processes the imaging information is located in a separate control room, where the technologist operates the scanner and monitors your examination in direct visual contact and usually with the ability to hear and talk to you with the use of a speaker and microphone.

## How does the procedure work?

The different types of medications injected into the epidural space create different effects for patients. Corticosteroids act as anti-inflammatory agents, reducing swelling and nerve irritation to allow the nerve time to heal itself, thereby preventing further discomfort. By delivering an epidural injection directly into the epidural space, the medication moves throughout the epidural space, coating the inflamed or irritated nerve roots. Therefore, a lumbar injection could alleviate pain associated with the lower back and the nerves traveling to the lower limbs, such as the sciatic nerves. Similarly, if an epidural injection is performed in the neck, it should spread throughout the cervical epidural space and provide relief to nerve roots in the neck which can also relieve upper extremity pain. (See the Facet Joint Block page for more information). The duration of improvement from the epidural injection varies. Some patients have permanent relief. In others, the effects may not last long. In some cases, you may have a series of injections before you may benefit from significant relief. A patient may experience relief for a matter of days up to several months; however, the pain may eventually return, requiring another series of injections or an alternative treatment.

## How is the procedure performed?

This procedure is often done on an outpatient basis. However, some patients may require admission following the procedure. Please consult with your physician as to whether or not you will be admitted.

The epidural injection usually takes only minutes to administer, but positioning in the CT or x-ray unit may take longer.

When you arrive at the office, hospital or surgical center, the nurse or technologist may place an intravenous (IV) line in your arm to deliver a relaxation medication during the procedure; this is seldom needed but will be available if required. You will be situated on your stomach or on your side, on a table in the fluoroscopic room or in computed tomography room and made to feel as comfortable as possible.

The doctor will identify where the injection should be given and will clean and sterilize the skin with an antiseptic solution. He or she will then inject a local anesthetic to help numb the area before administering the epidural injection.

Once the area is numb, the doctor will most likely use imaging guidance to help guide the epidural needle to exactly the right position. When the needle is in place, a contrast material will be injected so the doctor can accurately target the nerves for sufficient distribution of the medication. Then, your doctor will slowly inject the medication, which is typically a combination of anesthetic and anti-inflammatory drugs (cortisone/steroids).

When finished, you will be moved into a chair or bed and allowed to rest for a few minutes to an hour.

The nurse or technologist will make sure you do not have any unfavorable reactions to the medication before you are allowed to leave.

## What will I experience during the procedure?

You may have no sensation whatsoever, however you may feel tingling or pressure when the injection is administered. Depending on the amount of swelling in the area, you may experience a burning sensation at the site or in your upper or lower extremities or some mild discomfort as the medication enters the epidural space. When the injection is finished, however, any discomfort usually disappears. It is also possible to feel "pins and needles" in your arms and legs, depending on the injection site. If you feel any sharp pains, however, tell your doctor immediately.

Due to the numbness and any discomfort you may experience after the procedure, you may have some difficulty walking on your own and getting in and out of the car. This is normal and should subside in a matter of hours. You should take it easy for the rest of the day, though, and may resume normal activities the next day.

The epidural may not take effect immediately—it is common for improvement in the pain to occur progressively over the first 48 hours. The effects may last for a matter of days, weeks, and occasionally months.

In some patients, the pain may initially feel slightly worse before it starts to improve.

## Who interprets the results and how do I get them?

A radiologist or anesthesiologist will most likely perform the epidural injection, however, a neurosurgeon, orthopedic surgeon, or neurologist may also administer it.

The doctor who delivers the injection will follow up with you to see how you are doing and determine if further action is required. Any imaging that is performed during the procedure itself will conclude with the procedure, and no follow-up image interpretation is necessary.

Your interventional radiologist may recommend a follow-up visit after your procedure or treatment is complete.

The visit may include a physical check-up, imaging procedure(s) and blood or other lab tests. During your follow-up visit, you may discuss with your doctor any changes or side effects you have experienced since your procedure or treatment.

## What are the benefits vs. risks?

### Benefits

- Temporary or prolonged pain relief.
- Temporary or prolonged reduction of inflammation in the region of the spine causing pain.
- Better ability to perform daily activities without the restrictions previously caused by pain.
- May help confirm the exact site of the pain generator. This is often a problem in patients with more than one possible cause of pain.
- May reduce the need for invasive procedures.

## Risks

- Temporary increase in pain.
- Headache is also extremely rare, but possible.
- Reaction to the medications, such as hot flashes or rash.
- Infection at the injection site.
- Bleeding if a blood vessel is inadvertently damaged.
- Injury to the nerves at the injection site.
- Temporary paralysis of the nerves leading to the bladder and bowel, causing temporary bladder or bowel dysfunction.
- When fluoroscopy or CT is used, there will be minimal low-level radiation. See the Safety page for more information about radiation dose.

Women should always inform their physician and x-ray technologist if there is any possibility that they are pregnant. Many imaging tests are not performed during pregnancy so as not to expose the fetus to radiation. If an x-ray is necessary, precautions will be taken to minimize radiation exposure to the baby. See the Safety page for more information about pregnancy and x-rays.

If the epidural injection is given in the neck, more serious complications, such as spinal cord injury, stroke, or death, are possible if the needle is placed incorrectly.

However, your doctor will use imaging guidance and a sterile technique to minimize these risks.

## What are the limitations of Epidural Injection?

The effects of an epidural injection may be temporary and may offer little to no long-term relief. Each individual is different; however, sometimes the injection may be repeated after a number of weeks or months to receive maximum benefit from the medication. If the epidural injections do not help alleviate your pain, your doctor will most likely recommend a different therapeutic approach.

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