

# Contrast Injection for CT, MRI and Angiography Examinations

An information guide



# **Contrast Injection for CT, MRI and Angiography Examinations**

## **What is Contrast (dye)?**

You have been asked to attend the x-ray department for a radiology examination. This examination is likely to be either a CT scan, MRI scan or an angiography procedure and they are routinely requested because they provide important information about many diseases or injuries and can help in diagnosis and treatment.

There is an information leaflet linked to each of these scans and procedures. For most of these scans and procedures you will receive an injection of a contrast dye which is necessary to enhance these scans and procedures. The contrast dye is a colourless fluid that will be injected through a cannula (small plastic tube) that will be placed in either your vein or artery.

Sometimes these contrast dyes can either lead to problems with your kidneys, or cause problems in patients who already have kidney disease. There are two rare but serious problems associated with contrast dyes and the kidneys: contrast induced nephropathy (CIN) and nephrogenic systemic fibrosis (NSF).

## **What is Contrast Induced Nephropathy (CIN)?**

CIN is a rare disorder and occurs when kidney problems are caused by the use of certain contrast dyes. In most cases contrast dyes used in tests, such as CT (computerized tomography) and angiograms, have no reported problems.

About 2 percent (2 in every hundred people) of people receiving dyes can develop CIN. However, the risk for CIN can increase for people with diabetes, a history of heart and blood diseases, and chronic kidney disease (CKD). For example, the risk of CIN in people

with advanced chronic kidney disease increases to 30 – 40 percent (30-40 people in every hundred). The risk of CIN in people with both CKD and diabetes is 20 to 50 percent.

CIN can show as a sharp decrease in kidney function over a period of 48-72 hours. The symptoms can be similar to those of kidney disease, which include feeling more tired, poor appetite, swelling in the feet and ankles, puffiness around the eyes, or dry and itchy skin. In many cases, CIN is reversible and people can recover. However, in some cases, CIN can lead to more serious kidney problems and possible heart and blood vessel problems.

### **What is Nephrogenic Systemic Fibrosis (NSF)?**

NSF is a rare but serious disease affecting skin and other body organs and has been found in some patients with advanced CKD after exposure to gadolinium-containing contrast dyes that are used in magnetic resonance imaging (MRI scan).

NSF appears to affect about 4 percent of patients (4 in one hundred) with advanced CKD. People with acute kidney injury (AKI) are also at higher risk. NSF has not been reported in people with mild kidney damage or normal kidney function. NSF can be painful, debilitating, or even fatal.

Symptoms and signs of NSF can include burning and itching of the skin, red or dark patches on the skin, joint stiffness, or muscle weakness. The disease can develop within 24 hours up to around 3 months.

MRI scans are routinely used in patients to see internal organs and limbs to help detect and monitor many different diseases or injuries. Contrast dyes are often used during MRI to enhance the scans obtained.

These contrast dyes contain an element called gadolinium. In people with CKD, the kidneys are not able to get rid of wastes, drugs and toxins the way they normally should and so it takes much longer to get rid of the contrast dye which may lead to NSF.

### **How can I reduce my risk for CIN and NSF?**

Know how well your kidneys are working and if you have chronic kidney disease and tell any healthcare professionals about it when you meet them.

Your referring doctor will arrange for you to have a blood test before coming for the scan or procedure which will show how well your kidneys are working.

Ask your referring doctor about your risk for NSF and CIN, based on any risk factors you might have e.g. chronic kidney disease, diabetes, acute kidney injury, advanced kidney disease, heart and blood vessel problems, older age.

Discuss why you need to have contrast dye with your referring doctor or nurse.

Ask about alternatives such as a test without contrast dye, if possible.

If you need to have contrast dye then make sure you follow any instructions before, during or after the procedure.

You need to increase your intake of fluids starting 24 hours before your scan and continuing for 2-3 days after the scan make sure that you drink plenty of fluids before and after the scan or procedure so that you are well hydrated.

Depending on the results of your blood test you may need to have fluids given through a 'drip' in your arm before and after the scan or procedure to help with hydration. This will mean that you will be asked to come into hospital before the scan/ procedure

appointment so that the fluids can be started and you will stay in hospital for a little while after the scan or procedure to allow more fluids to drip through a vein in your arm.

If you are asked to attend for a scan or procedure and you have recently had a scan or procedure with contrast dye within the last 2 weeks please let your doctor or nurse know so that enough time has passed for the contrast dye to be completely out of your system before having another scan or procedure.

Make sure your doctor checks for CIN or NSF after an MRI scan, CT scan or procedure with contrast dye.

Know the signs and symptoms of **CIN** and **NSF**:

### **CIN Symptoms**

- Feeling more tired
- Poor appetite
- Swelling in the feet and ankles
- Puffiness and swelling around the eyes
- Dry and itchy skin

### **NSF Symptoms**

- Burning, itching, swelling, scaling, hardening and tightening of the skin
- Red or dark patches on the skin
- Stiffness in joints with trouble moving, bending or straightening the arms, hands, legs or feet
- Pain in the hip bones or ribs; or muscle weakness

Contact your doctor or nurse immediately if you experience any of these symptoms.

## **Can NSF and CIN be treated?**

There are no proven treatments for NSF and CIN, but symptoms may gradually improve over time. New medications are showing promising results but preventing the symptoms in the first place remains most important.

## **What are the benefits of having a scan or procedure with contrast dye?**

These scans and procedures using contrast dye have helped in the diagnosis and treatment of many patients with various diseases and injuries, so there is also a risk if these scans and procedures don't happen.

It is important however, that the benefits of having a contrast dye scan or procedure outweigh the risks associated with the use of contrast dye and the risks associated with not having the scan or procedure.

If you have any questions or concerns regarding your scan or procedure please contact the radiology booking centre on 0161 778 2233.

**Notes:**

**If English is not your first language and you need help, please contact the Interpretation and Translation Service**

Jeśli angielski nie jest twoim pierwszym językiem i potrzebujesz pomocy, skontaktuj się z działem tłumaczeń ustnych i pisemnych

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**For general enquiries please contact the Patient Advice and Liaison Service (PALS) on 0161 604 5897**

**For enquiries regarding clinic appointments, clinical care and treatment please contact 0161 624 0420 and the Switchboard Operator will put you through to the correct department / service**

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