

## Imaging Department Standard Operating Procedures

### Managing Intravenous Contrast Medium Extravasation

Refer also to SOP(s): ISAS SOP – CL5 Managing drugs and contrast media

Refer to Risk Assessment: N/A

Refer to COSHH Assessment: N/A

Location(s): Imaging Shared Drive, Departmental Document Folder	Issue No: 4
Author: Sheila Black, Lead Supt Radiographer; Dr Jonathan Richenberg, Lead radiologist CT	Authorising Committee: Imaging Management Team 10/05/2016
Manager responsible (name): Sheila Black, Lead Superintendent Radiographer	Manager responsible (post): Lead Supt Radiographer, Lead Nurse
Issue date: May 2016	Review date: May 2019

## **INDEX**

---

- 1. INTRODUCTION**
- 2. READERSHIP**
- 3. ROLES & RESPONSIBILITY**
- 4. EQUIPMENT**
- 5. HAZARDS and SAFETY and RADIATION PROTECTION**
- 6. PROCEDURE / SYSTEMS IN PLACE**
  - 6.1 Prevention**
  - 6.2 Signs and Symptoms**
  - 6.3 Treatment**
  - 6.4 Recording an Extravasation event**
- 7. MONITORING & QUALITY CONTROL**
- 8. DISSEMINATION**
- 9. REFERENCES**
- 10. APPENDICES / RELATED DOCUMENTS**
- 11. DOCUMENT HISTORY**

## 1. INTRODUCTION

Contrast medium extravasation is a complication unique to imaging. It is an extravascular infusion of a contrast agent caused by dislodgement of the intra-venous (I.V). cannula during a hand held injection or injection via pump. Contrast extravasations range in severity from mild discomfort to skin necrosis, ulceration and deformity and loss of the affected extremity.

This procedure has been written to reduce the instance of contrast medium extravasation within the Imaging Department and to provide standard guidance for the action to be taken following an occurrence.

## 2. READERSHIP

This procedure is to provide guidance for radiologists, radiographers and nursing staff who undertake contrast injections and for the radiologists that supervise I.V. injections within the Imaging Department.

## 3. ROLES AND RESPONSIBILITIES

Imaging Services Manager

- Overall responsibility for ensuring that staff are trained appropriately to undertake I.V. cannulation and/or manage extravasation should it occur.

Radiologists or supervising doctor eg referrer

- Provide medical advice and treatment as necessary following an extravasation event

Superintendent Radiographers

- Responsible for ensuring that staff working in their clinical areas are trained appropriately to undertake .I.V. cannulation and that staff maintain competency

Radiographers and Nurses

- All relevant staff must be assessed as competent to administer intravenous contrast under the appropriate Patient Group Direction (PGD) and follow Trust cannulation and therapy guidelines (TCP021 Intravenous therapy Administration for Adults and TCP 035 Peripheral Cannulation in Adults.)

Lead Nurse

- Overall responsibility for ensuring appropriate nursing care is provided for a patient should an extravasation occur in hours.

## 4. EQUIPMENT

N/A

## 5. HAZARDS and SAFETY and RADIATION PROTECTION

Extravasation – staff follow this procedure

## **6. PROCEDURE / SYSTEMS**

Within the Imaging Department different members of staff may be involved in siting the cannula, connecting it up to the pump injector and performing the scan. Injection of contrast medium is the responsibility of the member of staff connecting the cannula to the pump injector.

### **6.1 Prevention**

Prevention is the key to avoiding this complication.

1. Identifying patients who are at greater risk of an extravasation may help to prevent complications. These patients include the following:
  - Patients who are unable to tell you there is a problem with the I.V. infusion (e.g. children, elderly patients, unconscious patients)
  - Patients with abnormal circulation to the extremity used for injection (e.g. patients with diabetes mellitus, peripheral vascular disease, deep vein thrombosis, stroke)
  - Patients who are receiving chemotherapy through the I.V. access
2. Cannulation should only be attempted twice before seeking help from a more experienced practitioner (Section 3.5 TCP 035 Peripheral Cannulation in Adults) All cannulas must be thoroughly flushed before contrast administration.
3. Close and careful observation of the I.V. site during the contrast injection is appropriate. This must be undertaken in the scan room by suitably trained staff when the scanning protocol allows.
4. If a patient does develop an extravasation, quick and thorough treatment is essential to prevent long-term complications.

### **Out of Hours**

Out of hours, administration of I.V. contrast should be performed by the referring team for all patients who are at risk of extravasation. It is the doctor's responsibility to observe the cannula for signs of extravasation during contrast injection.

The radiographer must ensure that the doctor is aware of the scan delay and therefore able ensure appropriate observation for any signs of extravasation.

If the referring team are not able to support the contrast injection as required by this procedure the radiographer must not proceed with the examination and seek advice from the on-call radiologist.

### **6.2 Signs and Symptoms**

The first signs of an extravasation can be subtle.

Signs and symptoms include pain, burning, stinging at the administration site and swelling as the contrast is being infused.

### **6.3 Treatment**

At the first sign of an extravasation the following steps must be taken:

1. Stop the contrast infusion and the Imaging examination i.e. CT/MRI
2. Explain to the patient what has happened
3. Remove the I.V. cannula
4. Elevate the affected extremity above the level of the heart in order to help the tissue reabsorb the contrast

**Managing Intravenous Contrast  
Medium Extravasation**

**SOP Gen-Imag-002**

5. Apply a cold compress to the site
6. If the patient is distressed and/or in pain notify the supervising radiologist, and ask them to review the patient before discharge
7. During the out of hours period ensure the supervising doctor is informed that the I.V. contrast extravasated
8. Assess the affected extremity for redness and firmness at the I.V. site and follow the guidance of the supervising radiologist if required or referring doctor (if out of hours)
9. After close observation, if symptoms have resolved following agreement by the senior radiographer in the area or by the supervising radiologist if requested
  - outpatients may return home with an aftercare sheet
  - in-patients may be returned to the ward and the ward nurse informed with an aftercare sheet
10. Documentation:  
Senior Radiographer in the area to document:
  - treatment given and subsequent condition of the skin around the injection site in the comments box in the patients event on the Computed Radiology Information System (CRIS)
11. If necessary the supervising doctor may consider seeking advice from the Plastics Unit at East Grinstead
12. Radiographer or nurse to document on CRIS comments:
  - extravasation occurred and the amount of contrast injected
  - advice sheet\* given to patient (NB advice sheet must also be scanned onto CRIS)
  - name of supervising radiologist/doctor if advice requested
  - ward or Emergency Department (ED) nurse informed if an in-patient or ED patient.

**6.4 Recording the Extravasation event**

If contrast medium extravasation occurs and it is confirmed that the departmental procedure was not followed a DATIX incident reporting form must be completed.

If the procedure has been followed a record of the event should be recorded in the Contrast Reaction/Extravasation Log

**7 MONITORING & QUALITY CONTROL**

<b>Developmental Outcome Measure</b>	<b>Monitoring Outcome Measure</b>	<b>Frequency</b>	<b>Responsibility for performing monitoring</b>	<b>Where is monitoring reported and who will be responsible for progressing and reviewing action</b>
Decrease in number of extravasation events	Monitoring via departmental log and DATIX	6 monthly	Superintendent Radiographers	Lead Superintendent Radiographers

## **8 DISSEMINATION**

Dissemination of this SOP will be via a range of forums e.g.:

- Imaging Management Team
- Other senior staff e.g. Superintendent Radiographers, Advanced Practitioners, senior nurses
- Staff meetings
- Radiologist meetings
- Quality, Safety and Patient Experience sessions

## **9 REFERENCES**

## **10 APPENDICES / RELATED DOCUMENTS**

Appendix 1 – Contrast Medium Extravasation Discharge Instruction  
(also saved separately in Dept Wide Document folder under 'Other documents')

### **Contrast Medium Extravasation (Leakage of dye)**

#### **Discharge instructions**

1. Observe the affected site for

- Increased redness or skin colour change
- Increased pain
- Blisters
- Firmness at site
- Unusually cold/hot at site
- Change in the sensation of site/limb

If any of these symptoms occur, notify the department where you had your scan performed between 9am and 5pm weekdays and go to the closest A&E department.

2. Elevate the affected limb above the level of the heart for the next 4 hours.

3. Apply intermittent cold pack (15 minutes on, followed by 15 minutes off) to the site for the next hour. Continue to apply a cold pack to the site for 15mins, one to three times a day for the next 3 days or until the symptoms have resolved.

4. Take paracetamol or your usual over the counter painkiller as necessary for discomfort at the injection site

5. If you have any concerns after you arrive home, please call the radiology department on:

- RSCH CT Department : **01273 696955 ext 63914**
- PRH CT Department **01444 441884 ext 5489**
- HWP CT Department **01444 441881 ext 5718 or 5719**

## 11 DOCUMENT HISTORY/REVIEW

<b><u>Document Name</u></b>	Procedure for intravenous Contrast Medium Extraction	<b><u>Current Filename</u></b>	sop for iv contrast extravasation may 2016
-----------------------------	--	--------------------------------	--

<b><u>Issue</u></b>	<b><u>Date</u></b>	<b><u>Review Details</u></b>
1	Nov 2006	
2	Feb 2009	
3	May 2013	
4	April 2014	Transferred to new template and now covers Neuro-Imaging (previously separate.) Added 6.4 no.10. Removed re. doctor documenting extravasation details, only radiographer/nurse.
5	May 2016	Removed the need to seek radiologist advice for all extravasations