Sherwood Forest Hospitals
NHS Foundation Trust

MANAGING CONTRAST EXTRAVASATION IN ADULTS IN THE RADIOLOGY DEPARTMENT / MOBILE UNITS

Document Category:	**Clinical**
Document Type:	**GUIDELINE**

Keywords:	CT, MRI, Contrast, Extravasation, Complications, Imaging

Version:	**Issue Date:**	**Reviewed:**	**Next Review:**
V1	November 2018	December 2022	December 2024

Supersedes:	NA		
Approved by (committee/group):	Radiology Governance	**Date Approved:**	20/11/2018

Scope	**RADIOLOGY DEPARTMENT POLICY/GUIDELINE**

Evidence Base/ References:	1. Royal College of Radiologists, 2015. Standards for intravascular contrast administration to adult patients, third edition. 2. ACR Manual on contrast media. 3. Expert opinion.

Lead Division:	Diagnostics and Outpatient
Lead Specialty:	Clinical Radiology
Author:	Dr Dhamindra Shaman Gunarathne and Dr Constantine Fragkoulakis
Sponsor:	

	Name the documents here or record not applicable
Associated Policy	SFH Policy for Consent to Examination, SFH Patient identification policy, SFH Escort policy
Associated Procedure(s)	n/a
Associated Pathway(s)	n/a
Associated Standard Operating Procedure(s)	n/a
Other associated documents e.g. documentation/ forms	n/a

Consultation Undertaken:	Members of the Radiology Audit / Governance meeting

Template control:	v1.3 January 2018 2017 (Supports the Trust's 'Policy for Policies')

CONTENTS

1 Introduction / Background

This document has been designed to provide a guideline on how to manage contrast extravasation in adults in the Radiology department and any Mobile imaging units attached to or stationed at Sherwood Forest Hospitals. They are based on best current available evidence and are designed to help staff in their work without replacing their knowledge and skills. These guidelines are not prescriptive and are made available to be used as recommendations for good practice.

2 Aims / Objectives / Purpose (including Related Trust Documents)

This guideline aims to:

- Standardise and ensure best practice

This guideline applies to:

Staff group(s):

- Radiographers, Student radiographers and Advanced practitioners
- Radiologists, Associate specialists and Radiology trainees

Clinical areas(s):

- Radiology department and any mobile imaging units at SFH, particularly CT and MRI

Patient group(s):

- All patient's attending the Radiology department

Related Trust policies, guidelines or other Trust Documents

- Policy and procedure for the positive identification of patient's
- Escort policy
- Policy for the consent to examination, treatment and care

3 Roles and Responsibilities

Divisional Clinical Directors:

Will be responsible for ensuring clinical staff carry out the instructions within this guideline.

Medical and non-medical clinical and clerical staff:

Will be responsible for adhering to the processes in this document and should speak out where they feel there is a concern. Any concerns regarding the practice of individuals in relation to implementation of this policy should be escalated appropriately to an individual's line manager and/or professional lead. Where it has been identified that a patient has been put at risk by failure to follow the guidance, staff should complete a Datix incident form.

4 Guideline Details

Extravasation refers to the damage caused by leakage of solutions from the vein to the surrounding tissue spaces during intravenous administration due to cannula displacement or by being injected outside the vessel.
The degree of damage depends on the amount of drug extravasated and the speed of administration.

Prevention

Identify risk factors such as:

1. Very young or elderly patients who have fragile skin and veins.
2. Patients with compromised lymphatic and/or venous drainage, eg: Cannula sited on side of mastectomy or lymph node clearance or where lymphoedema is present.
3. Patients who are unconscious, sedated or confused.
4. Patients who have had multiple venepuncture or cannula sites, causing thromboses of vessels.
5. Patients suffering from decreased sensation or poor circulation caused by peripheral neuropathy, Diabetes, Raynauds phenomenon or peripheral vascular disease.
6. Patients with superior vena cava obstruction.
7. Large volume of contrast medium.
8. Use of a power injector.
9. High osmolar contrast medium.

Minimising the risk of extravasation

1. Ensure that the cannula or butterfly is of an appropriate size for that patient and the imaging examination.
2. Use a recently inserted cannula.
3. Ensure that the cannula is secure during the administration of drugs.
4. Never cover the cannula site with a bandage.
5. Check blood return from the cannula if possible during the administration of contrast media and always flush with saline first.
6. Check for swelling, inflammation and pain around cannula site during administration of IV drugs.

If in doubt - re-cannulate!

Management of contrast extravasation (see appendix 2):

1. Stop injection immediately once extravasation is suspected.
2. Reassure the patient.
3. Remove cannula.
4. Elevate affected limb. Maintain limb elevation for a minimum of 30 minutes, and continue until there is no significant residual swelling.
5. Apply ice pack over puncture site to help reduce initial swelling for 15 minutes or longer if it relieves the patient's affected limb.
6. Advise patient that bruising may occur.
7. The patient should be kept within the Radiology department for at least one hour and the affected limb should be examined on a regular basis over the period to ensure that reduction of the swelling has occurred and that the patient does not have pain at the site of extravasation.
8. If inflammation, erythema or blistering occurs whilst the patient is still within the department, transfer to the Emergency Department should be arranged with a view to a prompt surgical referral.
9. If symptoms do not resolve quickly, admit and monitor via Emergency Department.
10. If the patient's swelling has reduced over the initial monitoring period of 1 hour and the patient has no pain, then he/she can be allowed to leave the department with an appropriate dressing.
11. Advise the patient to consult their GP or to attend ED if any further problems occur.
12. Always supply the patient with an advice leaflet (please see appendix 1).
13. Inform the in-patient ward for extravasation in in-patients and document occurrence in the medical notes. A cold compression/ice pack should be applied over the initial swelling and the arm should be raised until the patient has returned to the ward and subsequently reviewed on the ward. The ward should be informed of the possibility of inflammation, erythema or blistering occurring and that it should trigger an appropriate surgical referral.
14. Record details of the incident with management advice in the report and notes. Document the extravasation on the patient's examination report on CRIS.

Minor extravasation

For eg – hand injection up to approximately 10 ml. It may only be necessary to apply a cold compress. Skin blistering, paraesthesia, altered tissue perfusion and increasing or persistent pain for more than four hours suggest severe injury and appropriate onward referral should be sought.

5 Education and Training

- Radiographers and advanced practitioners are qualified healthcare professionals who undertake and may report diagnostic, screening or interventional examinations. They will hold relevant qualifications and have relevant experience and work very closely and under the indirect supervision of the Consultant Radiologists. They will continue to engage in CPD.

- Radiologists are medically qualified and registered with the GMC. They will continue to develop their CPD at the expected rate.

6 Monitoring

- Peer review, quality assurance process and audit

7 Equality, Diversity and Inclusivity and Impact Assessments

Equality Impact Assessment (EqIA) Form (please complete all sections)

Name of service/policy/procedure being reviewed: Interventional procedures in the breast unit			
New or existing service/policy/procedure: New			
Date of Assessment: August 2018			
For the service/policy/procedure and its implementation answer the questions a – c below against each characteristic (if relevant consider breaking the policy or implementation down into areas)			
Protected Characteristic	a) Using data and supporting information, what issues, needs or barriers could the protected characteristic groups' experience? For example, are there any known health inequality or access issues to consider?	b) What is already in place in the policy or its implementation to address any inequalities or barriers to access including under representation at clinics, screening?	c) Please state any barriers that still need to be addressed and any proposed actions to eliminate inequality
The area of policy or its implementation being assessed:			
Race and Ethnicity:	n/a	n/a	n/a
Gender:	n/a	n/a	n/a
Age:	n/a	n/a	n/a
Religion:	n/a	n/a	n/a
Disability:	n/a	n/a	n/a
Sexuality:	n/a	n/a	n/a
Pregnancy and Maternity:	n/a	n/a	n/a
Gender Reassignment:	n/a	n/a	n/a
Marriage and Civil Partnership:	n/a	n/a	n/a
Socio-Economic Factors (i.e. living in a poorer neighbourhood / social deprivation):	n/a	n/a	n/a

What consultation with protected characteristic groups including patient groups have you carried out? The following individuals have been consulted in the update of this guideline:

- Members of the Radiology Audit / Governance meeting including all departmental Radiologists, Radiographers, Management and Clerical staff.

As far as you are aware are there any Human Rights issues be taken into account such as arising from surveys, questionnaires, comments, concerns, complaints or compliments?

- None known

Level of impact
From the information provided above and following EqIA guidance document please indicate the perceived level of impact:

Low Level of Impact

For high or medium levels of impact, please forward a copy of this form to the HR Secretaries for inclusion at the next Diversity and Inclusivity meeting.

Name of Responsible Person undertaking this assessment: Dr Constantine Fragkoulakis
Signature:
Date:

8 Appendices

APPENDIX 1: PATIENT/CLINICIAN ADVICE LEAFLET

What is extravasation?
Contrast dyes are usually given to patients having an MRI or CT scan by injection into a vein in your arm or hand. Occasionally the injection may leak out from the vein to the tissues under the skin – this is known as extravasation. If this has happened, you will experience a stinging sensation where the contrast has gone into the tissue and it can be painful. This will usually wear off after about 30 minutes. You may also have some swelling of the arm or hand – please read the paragraph below on what to do if this happens.

Sometimes you may need another injection of contrast and if necessary, this will be discussed with you.

What will happen if there has been a leak?
The radiographer will massage and elevate your arm as soon as the leak happens. A cold compress will be applied to the area if required and, if possible, we will then continue with the scan. We will keep you in the department at least for one hour for observation.

If the extravasation is severe, you will be referred to the A&E department for further treatment.

Is there anything I can do at home?
Massage the area where the contrast has gone into the tissue. If there is swelling:

- elevate the affected arm as much as possible. At night, keep it elevated on two pillows (you should continue to do this until the swelling has gone down).
- use an ice-pack or a bag of frozen vegetables wrapped in a clean tea towel over the site. Never place ice directly on skin as it may cause frostbite, and do not leave it on for more than 15 minutes at a time.

If the area is painful, take your usual painkillers.

Is there anything I need to look out for?
In most cases this is a minor injury and does not require any treatment. However, in a small number of cases the injury is more severe and you will need to seek medical attention from your GP or your nearest Emergency Department (A&E).

Important

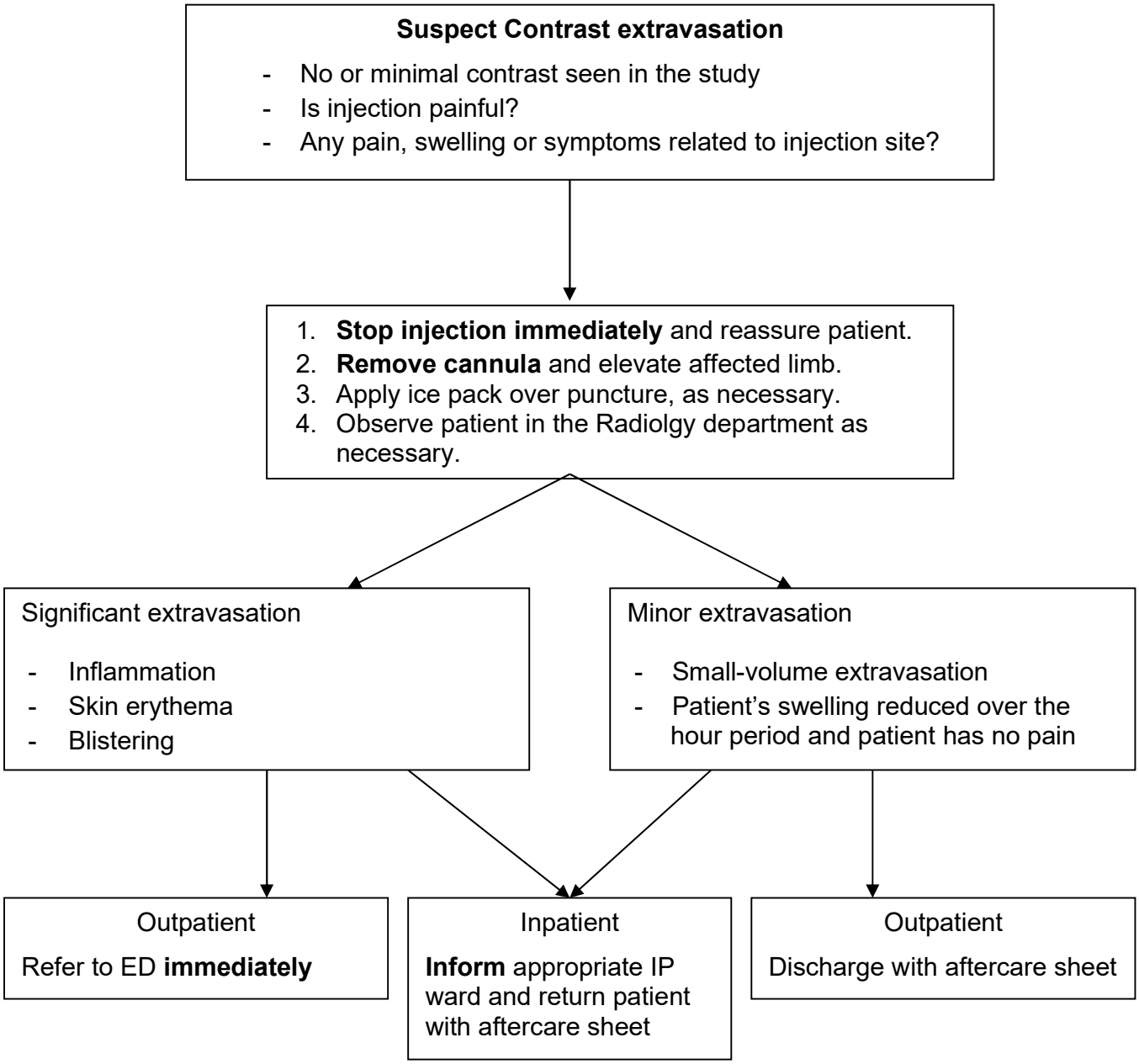
If you experience any of the following symptoms, you should seek advice from your GP or attend your nearest Emergency Department (A&E) and take this leaflet with you:

- The pain becomes more severe and is not controlled by simple painkillers.
- There is increased swelling of the arm or hand.
- The arm or hand changes in colour.
- There is blistering or ulceration of the skin around the injection site.
- There are pins and needles or altered sensation in the arm or hand.

Contact us

If you have any questions or concerns about your **CT/ MRI scan with contrast**, please contact the Radiology Department.

APPENDIX 2: FLOWCHART FOR MANAGEMENT OF CONTRAST EXTRAVASATION



Complete Datix and enter information into Q&A's on CRIS

Extravasation Documentation for CRIS – See appendix 3 of Contrast Extravasation guidelines

APPENDIX 3: EXTRAVASATION DOCUMENTATION FOR CRIS

EEEE

1. Datix completed: * Mark grade of harm as 2
2. Cannula gauge & site:
3. Cannula in situ or inserted in department:
4. Flow rate of injection:
5. Intended contrast volume:
6. Estimated extravasation volume:
7. Patient symptoms & severity:
8. Management - Immediate aftercare:
9. Explanation to patient/relative:
10. Ward informed (if applicable):
11. Aftercare sheet given:
12. Onward referral:
13. Follow up date: (24hours – give cannulation doc to the imaging assistant)
14. Comments:
15. Entered by: