

## Medical Imaging Contrast Media (Intra-vascular)

### 1. Purpose

This Guideline provides recommendations regarding best practice and effective risk management in the administration of intra-vascular contrast media.

### 2. Scope

This Guideline provides information for all Queensland Health employees (permanent, temporary and casual) and all organisations and individuals acting as its agents (including Visiting Medical Officers and other partners, contractors, consultants and volunteers).

Note: This Guideline does not cover the administration of contrast media used in ultrasound, cardiology and surgical procedures as they have different risk management requirements.

### 3. Related documents

- Medical Imaging Informed Consent Directory:  
[http://www.health.qld.gov.au/consent/html/sub\\_specialties/medical\\_imaging.asp](http://www.health.qld.gov.au/consent/html/sub_specialties/medical_imaging.asp)
- Iodinated Contrast – Patient Information:  
[http://www.health.qld.gov.au/consent/documents/medical\\_imaging\\_78.pdf](http://www.health.qld.gov.au/consent/documents/medical_imaging_78.pdf)
- Iodinated Contrast - Consent for Patients with Renal Impairment:  
[http://www.health.qld.gov.au/consent/documents/medical\\_imaging\\_43.pdf](http://www.health.qld.gov.au/consent/documents/medical_imaging_43.pdf)
- MRI Contrast – Patient Information:  
[http://www.health.qld.gov.au/consent/documents/medical\\_imaging\\_81.pdf](http://www.health.qld.gov.au/consent/documents/medical_imaging_81.pdf)
- MRI Contrast – Consent for Patients with Renal Impairment:  
[http://www.health.qld.gov.au/consent/documents/medical\\_imaging\\_43.pdf](http://www.health.qld.gov.au/consent/documents/medical_imaging_43.pdf)
- Medical Imaging Request Form (statewide or HHS-specific):  
<http://qheps.health.qld.gov.au/hssa/radiology/docs/forms/mi-request.pdf>

### 4. Guideline for Contrast Media Administration

#### 4.1 Requirements

Any examination requiring the administration of contrast media involves the risk of an adverse reaction. Patient safety will be maintained through the identification and management of risk factors prior to the administration of contrast media.

Risk factors include: age, renal impairment, diabetes and previous reaction to contrast. These shall be indicated on the medical imaging request form.

If the patient meets any of the following criteria, a recent (less than one month) eGFR is indicated:

- Over 70 years of age
- Renal impairment
- Diabetes
- On metformin

Discussion with the radiologist to assess the risks versus the benefits of the procedure may be required. Patients identified as having renal impairment are required to provide written consent in accordance with the Medical Imaging Informed Consent Directory. A clinical decision to postpone or not perform the procedure should be documented in the patient's medical record.

#### 4.2 Role Delineation

The **radiologist** has the overarching responsibility for contrast administration from receipt of the referral for imaging until the outcomes are communicated to the referring medical officer. This includes:

- Ensuring that risk factors are identified and managed
- Ensuring the patient is informed of the risks associated with the procedure
- Obtaining documented consent where indicated
- Approval of contrast requirements including dose and type

The radiologist may delegate the task of obtaining intravenous access and/or the administration of contrast to a medical officer, radiographer or nurse who is appropriately trained (training requirements are identified in sections 4.3 and 4.4 below).

An onsite medical officer shall be readily available to attend the patient in the event of an emergency. Written protocols shall exist indicating the dose and type of contrast to be administered and when radiologist consultation is required.

The radiologist may delegate the responsibility for adequately informing the patient about risks and obtaining their consent to a medical officer delegate but in doing so retains responsibility for ensuring the patient is properly advised. The medical officer delegate may refuse to undertake this task if they consider they lack the expertise to do so or have insufficient knowledge about the procedure to adequately advise the patient, in which case they should refer the matter to the radiologist.

The **referring medical officer** has the responsibility to:

- Review the patient's medical history to ascertain any risk factors for the use of contrast media.
- Document any risk factors as identified on the medical imaging request form.
- Contribute to the process of informing the patient by identifying and discussing the risks associated with the procedure and provide the patient with the relevant contrast information sheet.

- If the medical officer delegate, obtain a documented consent for patients with renal impairment.

The **radiographer** or **medical imaging nurse** has the responsibility to:

- Contribute to the process of informing the patient by ensuring the patient has received and understood the relevant contrast information sheet.
- Confirm with the patient prior to the administration of contrast media any risk factors that may be present and ensure these are appropriately managed.
- Ensure that a documented consent form has been completed for patients with renal impairment.
- Confirm that the type, volume and strength of contrast being administered is consistent with the protocol as approved by the radiologist.
- Follow the procedures below for peripheral intravenous cannulation and injection of contrast, if delegated these tasks by the radiologist.

#### 4.3 Procedure for peripheral intravenous (IV) cannulation

Medical imaging staff who have gained competency may perform IV cannulation for the purpose of contrast administration in accordance with the individual hospitals' IV cannulation procedure.

Competency shall be maintained through regular practice and adherence to local competency requirements.

An appropriate number of attempts at peripheral IV cannulation shall be made and if there is failure to cannulate, a more experienced staff member should perform the cannulation, or ultrasound guidance should be considered.

#### 4.4 Procedure for IV contrast administration

It shall be clearly identified by a radiologist when the administration of IV contrast is required. This may occur by authorised local contrast protocols. Any variations to the contrast protocol will be directed by the radiologist.

All injections of contrast will be flushed pre and post administration with 0.9% sodium chloride, unless specifically excluded by the radiologist or medical officer.

The following process shall be followed:

- correctly identify the patient as per the correct patient, correct procedure, correct side and side policy (3C's)
- ensure that patients with risk factors have been correctly identified and appropriately managed and consent obtained where applicable
- ensure when administering IV contrast that a Medical Officer is immediately available to attend to the patient in the event of an emergency or complication of contrast injection
- confirm that the type, volume and strength of contrast being administered is consistent with the protocol as approved by the radiologist.

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- check the expiry date on the IV contrast and 0.9% Sodium Chloride flush labels prior to administration
- fill and label syringes with the type (contrast name or Sodium chloride), volume and strength. Manufacturer provided labels detailing this information are acceptable.
- ensure labels are clearly visible and placed immediately on the syringe by the medical imaging staff member who filled the syringe.
- follow hospital / departmental guidelines and protocols on the appropriate IV access for contrast administration
- ensure IV access, equipment and flow rates are appropriate, and that all lines are free of air
- actively monitor the patient and cease the injection in the event of an adverse reaction or extravasation and seek medical assistance
- ensure patients are not left alone or unsupervised for the first 10mins post injection. It is advisable that the patient remain for at least 15 mins post-contrast. This shall be increased to 30 mins in patients at increased risk of contrast reactions.
- appropriately dispose of all used/filled syringes at the completion of the examination

Medical imaging staff administering contrast shall be trained and competent in:

- The recognition of contrast reactions
- The procedures for treating adverse reactions
- Cardiopulmonary Resuscitation (CPR) or Basic Life Support (BLS) – annual competencies required
- Use of equipment, e.g. pressure injector

Resuscitation equipment and medication for the treatment of complications shall be immediately available.

### 4.5 Documentation requirements

Recording of this information shall occur on either the medical imaging request form, patient record, electronic record or a Queensland Health recognised permanent record.

- type of IV access (injection site and lumen size)
  - name of medical imaging staff who cannulated the patient
- contrast type, volume, strength and batch number
  - name of medical imaging staff who administered the contrast

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In the event of an adverse reaction or extravasation of contrast requiring medical intervention, document this in the patient record and complete a PRIME incident report.

Local contrast protocols shall be reviewed annually and as required. These protocols shall be authorised by the Director of Radiology or accountable Radiologist.

### 5. Review

This Guideline is due for review on: 1 July 2016

**Date of Last Review:** N/A

#### Supersedes:

- Medical Imaging Contrast Media (Intra-vascular) Policy (QH-POL-016:2010)
- Medical Imaging Contrast Media (Intra-vascular) Implementation Standard (QH-IMP-016-1:2012); and
- Peripheral intravenous cannulation and injection of contrast media in medical imaging procedure (QH-PCD-061-1-1:2011)

### 6. Business Area Contact

Radiology Support, Health Services Support Agency

### 7. Definitions of terms used in the policy and supporting documents

Term	Definition / Explanation / Details	Source
Iodinated contrast	Iodinated contrast is the term used to describe all radiographic contrast media containing iodine. Iodinated contrast can either be ionic or non-ionic.	RBWH 15405/ CPP
Non-ionic contrast	Non-ionic contrast dissolves more readily in water which reduces its chemotoxicity and the tendency to cross cell membranes.	RBWH 15405/ CPP
Ionic contrast	Ionic contrast dissociates into charged particles in the blood. Ionic contrast is more toxic than non-ionic contrast and is usually reserved for intravenous CT cholangiography.	RBWH 15405/ CPP
Gadolinium	Gadolinium is a rare-earth metal with magnetic properties. It is used as a contrast agent in Magnetic Resonance Imaging (MRI).	RBWH 15405/ CPP
estimated Glomerular Filtration Rate (eGFR)	eGFR is a formula that uses age, gender and creatinine level to estimate the rate at which the kidneys are functioning.	Kidney Health Australia
Renal impairment	For application of this guideline, the following thresholds are used to determine renal impairment: <ul style="list-style-type: none"><li>• eGFR less than 45ml/min for iodinated contrast.</li><li>• eGFR less than 30 ml/min for gadolinium based contrast</li></ul>	Queensland Health Clinical Practice Guidelines for the Administration of Intravascular Contrast Media

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Unscheduled substances	Unscheduled substances do not belong to any of the schedules in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP). Iodinated contrast media, MRI contrast media and 0.9% sodium chloride are all unscheduled substances.	Therapeutic Goods Administration (TGA)
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### 8. References and Suggested Reading

- Australian Government Department of Health and Ageing (DoHA) Therapeutic Goods Administration (TGA) Standard for the Uniform Scheduling of Medicines and Poisons <http://www.tga.gov.au/industry/scheduling.htm>
- Australian Institute of Radiography. Guidelines for Radiographers Involved in Venepuncture. AIR; 2009 [http://www.air.asn.au/cms\\_files/10\\_Publications/guidelines\\_venepuncture.pdf](http://www.air.asn.au/cms_files/10_Publications/guidelines_venepuncture.pdf)
- Clinical Services Capability Framework version 3.1 Medical Imaging Services Module: [http://www.health.qld.gov.au/cscf/docs/6\\_medicalimaging.pdf](http://www.health.qld.gov.au/cscf/docs/6_medicalimaging.pdf)
- Diagnostic Imaging Accreditation Scheme (DIAS) Standards: [http://www.health.gov.au/internet/main/publishing.nsf/Content/93931E95D3F03D2CCA257703002B151A/\\$File/DI%20Accred%20Sch%20Stands.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/93931E95D3F03D2CCA257703002B151A/$File/DI%20Accred%20Sch%20Stands.pdf)
- National Recommendations for User-applied Labelling of Injectable Medicines, Fluids and Lines <http://www.safetyandquality.gov.au/our-work/medication-safety/user-applied-labelling/>
- Queensland Health Ensuring Correct Patient, Correct Site and Side, Correct Procedure (3Cs) Policy, Version 2.0, 2009 <http://qheps.health.qld.gov.au/psq/3cs/docs/3cs-policy.pdf>
- Royal Australian and New Zealand College of Radiologists. (RANZCR) Guidelines for Iodinated Contrast Administration; 2009: <http://www.ranzcr.edu.au/quality-a-safety/resources/guidelines>
- RANZCR Guidelines for the Use of Gadolinium-Containing MRI Contrast Agents; October 2009: <http://www.ranzcr.edu.au/quality-a-safety/resources/guidelines>
- RANZCR Standards of Practice for Diagnostic and Interventional Radiology Version 9.2, 2012: <http://www.ranzcr.edu.au/quality-a-safety/radiology/standards-of-practice>

### 9. Approval and Implementation

#### Policy Custodian:

General Manager Support Services, Health Services Support Agency

#### Approving Officer:

Kathy Byrne, Chief Executive, Health Services Support Agency

**Approval date:** 19 June 2013

**Effective from:** 1 July 2013