NHS Grampian NHS Highland NHS Orkney NHS Shetland NHS Tayside NHS Eileanan Siar Western Isles

Patient Group Direction For The Administration Of Medicines Included In The Radiographers Contrast Agent PGD Formulary By Radiographers Working Within NHS Grampian, Highland, Orkney, Shetland, Tayside And Western Isles

Lead Author: MRI Team Lead, NHSH	**Consultation Group**: See relevant page in the PGD	**Approver:** NoS PGD Group **Authorisation:** NHS Grampian

Signature:		**Signature:**

NoS Identifier: NoS/PGD/Radiographer _CAF/1454	**Review Date:** February 2026 **Expiry Date:** February 2027	**Date Approved:** April 2025

NHS Grampian, Highland, Orkney, Shetland, Tayside and Western Isles have authorised this Patient Group Direction to help individuals by providing them with more convenient access to an efficient and clearly defined service within the NHS Boards. This Patient Group Direction cannot be used until Appendix 1 and 2 are completed.

Uncontrolled when printed

Version 2.2 (Amended March 2025)

Revision History:

NoS PGD that has been superseded	NoS/PGD/Radiographer_CAF/1454, Version 2.1	
Date of change	**Summary of Changes**	**Section heading**
January 2024	Hydration guidance updated.	Iomeron® 400 Iohexol (Omnipaque®)
January 2024	Updated age limits.	All
January 2024	Updated eGFR.	All sections
May 2024	Removed statements around Individuals treated with interleukin-2 and certain neuroleptics or tricyclic antidepressants in special warnings and precautions	Iohexol Monograph
May 2024	Removed Concomitant medication statement in special warnings and precautions	Gadoteric acid Meglumine Monograph
May 2024	Removed Concomitant medication statement and β-blockers treatment with in special warnings and precautions	Iomeprol Monograph
July 2024	Formatting error of monograph title Iohexol and Iomeprol	Section p38, 39 Iomeprol monograph title.
March 2025	Tayside requested to be added the PGD	Throughout
March 2025	Clariscan age restriction removed	Clariscan Monograph
March 2025	Branded names removed for Primovist and Gadovist	Monographs
March 2025	Inclusion Criteria added	Iomeron Monograph

NoS Identifier: NoS/PGD/Radiographer_CAF/1454
Keyword(s): PGD Patient Group Direction patient group medicines radiographers contrast agent formulary

Policy Statement: It is the responsibility of the individual healthcare professionals and their line managers to ensure that they work within the terms laid down in this PGD and to ensure that staff are working to the most up to date PGD. By doing so, the quality of the services offered will be maintained, and the chances of staff making erroneous decisions which may affect individual, staff or visitor safety and comfort will be reduced. Supervisory staff at all levels must ensure that staff using this PGD act within their own level of competence.

The lead author is responsible for the review of this PGD and for ensuring the PGD is updated in line with any changes in clinical practice, relevant guidelines, or new research evidence.

Review date: The review date for a PGD needs to be decided on a case-by-case basis in the interest of safety. The expiry date should not be more than 3 years, unless a change in national policy or update is required.

Document:	Drafted:	June 2023
	Completed:	January 2024
	Approved:	June 2024 (published – June 2024)
	Amended and re-authorised:	July 2024, April 2025

Organisational Authorisations

This PGD is not legally valid until it has had the relevant organisational authorisation.

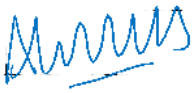
PGD Developed/Reviewed by;

Medical practitioner	**Name:** Dr McAteer **Health Board:** NHS Grampian **Title:** Consultant Radiologist **Contact email:** dympna.mcateer@nhs.scot **Signature:** …… **Date:** 23/05/2024
Senior representative of the professional group who will provide care under the direction	**Name:** Kate Smith **Health Board:** NHS Orkney **Title:** Lead CT Radiographer **Contact email:** kate.smith@nhs.scot **Signature:** …… **Date:** 16/05/2024
Lead author	**Name:** Adam Scotson **Health Board:** NHS Highland **Title :** MRI Team Lead **Contact email:** adam.scotson@nhs.scot **Signature:** …… **Date:** 15/05/2024
Pharmacist	**Name:** Kim Cruttenden **Health Board:** NHS Grampian **Title :** Pharmacist **Contact email:** kim.cruttenden3@nhs.scot **Signature:** …… **Date:** 04/06/2024

Approved for use within NoS Boards by;

North of Scotland (NoS) PGD Group Chair	Signature	Date Signed
Lesley Coyle		03/04/2025

Authorised and executively signed for use within NoS Boards by;

NHS Grampian Chief Executive	Signature	Date Signed
Adam Coldwells – Interim Chief Executive		09/04/2025

Management and Monitoring of Patient Group Direction

PGD Consultative Group

The consultative group is legally required to include a medical practitioner, a pharmacist and a representative of the professional group who will provide care under the direction.

Adam Scotson	**Lead Author:** MRI Team Lead, NHSH
Kim Cruttenden	**Pharmacist:** Principal Pharmacist, NHSG
Dympna McAteer	**Medical Practitioner:** Consultant Radiologist, NHSG
Kate Smith	**Senior Representative:** MRI Team Lead, NHSO
Laura Farquharson	Superintendent Radiographer, NHSG
Lauren Gault	Superintendent Radiographer, NHSG
Lorna Main	Superintendent CT Radiographer, NHSG
Sarah Porteous	Radiographer, NHSH
Kate Smith	Lead CT Radiographer, NHSO
Jane Macdonald	Radiology Manager, NHSWI
Findlay Hickey	Pharmacist, Primary Care Pharmacy, NHSH

Patient Group Direction For The Administration Of Medicines Included In The Radiographers Contrast Agent PGD Formulary By Radiographers Working Within NHS Grampian, Highland, Orkney, Shetland, Tayside And Western Isles

Clinical indication to which this PGD applies

Definition of situation/ Condition	This Patient Group Direction (PGD) will authorise radiographers to administer medications as included in the Radiographers Contrast PGD Formulary (Appendix 3) to individuals attending radiology departments for investigation or treatment. This PGD should be used in conjunction with the recommendations in the current British National Formulary (BNF), British National Formulary for Children (BNFC), and the individual Summary of Product Characteristics (SmPC).
Inclusion criteria	• Individuals attending radiology departments for investigation or treatment. **Note**: For specific age inclusion criteria see individual monographs. • The radiographer acting under this PGD must have evidence of a valid referral which has been justified by an entitled radiologist/clinical oncologist or appropriately qualified radiographer and which details contrast agent to be administered. • Individual must have completed a pre-examination checklist relevant to the imaging procedure being undertaken. **Note:** To be treated under this PGD with any iodine or gadolinium-based contrast media, a eGFR should be obtained only in individuals with risk factors for impaired renal function when renal function has not been recorded within the past 3 months, or if recorded eGFR was <30mL/min/1.73m^2. Where individual Boards use approved eGFR questionnaires there is no need to obtain a eGFR if no risk factors for renal impairment have been identified. However, if an individual has been acutely unwell or is known to have renal impairment, eGFR should have been obtained within the 7 days before the administration of contrast agent. See individual medicine monographs for specific inclusions and follow local individual Board protocols.

	Prior to the administration of the medicine, valid consent to receiving treatment under this PGD must be obtained. Consent must be in line with each individual NHS Board's current consent policy.
Exclusion criteria	• For specific age exclusion criteria see individual monographs. • Where there is no valid consent. **Note:** See individual medicine monographs for specific exclusions. Individuals for whom no valid consent has been received.
Precautions and special warnings	• If there is any concern about the appropriate use of the medicine in the specific indications given within the PGD then medical advice should be sought. • Precautions listed in the individual monographs should be taken into account. • The individual should be questioned to ensure they have no known allergies and the Radiology Information System (RIS) should be checked for any previous reaction to contrast agent. See individual medicine monographs for specific precautions and warnings.
Action if excluded from treatment	Medical advice must be sought – refer to relevant medical practitioner or radiologist. Document the reason for exclusion under the PGD and any action taken in the individual's appropriate clinical records.
Action if treatment is declined	Inform/refer to the relevant medical practitioner if individual declines treatment. Document that the administration was declined, the reason and advice given in appropriate clinical records.

Description of treatment available under the PGD

Name form and strength of medicine	See individual medicine monographs.
Legal status	The medicines included in this PGD are either Pharmacy (P) medicines or Prescription-only Medicines (POM).

Is the use out with the SmPC?	All used in line with SmPC.
Dosage/Maximum total dose	See individual medicine monographs.
Frequency of dose/Duration of treatment	See individual medicine monographs.
Maximum or minimum treatment period	See individual medicine monographs.
Route/Method of administration	See individual medicine monographs.
Quantity to be administered	See individual medicine monographs.
Storage requirements	See individual medicine monographs.
Additional Information	See individual medicine monographs.
Follow-up (if applicable)	The patient should not leave the department if they are feeling unwell without speaking to a radiographer. If necessary, a radiologist or other doctor should be contacted if the patient continues to feel unwell following the administration of a contrast agent.
Advice (Verbal)	• Advise individual what to expect and of the possible side effects and their management. • Individuals should not leave if they are feeling unwell without speaking to a radiographer, if necessary, a radiologist or other doctor should be contacted if the individual continues to feel unwell following the administration of a contrast agent. • Patients should be informed, that after they have left the department, if they develop persistent symptoms or have a serious adverse reaction, the individual/parent/carer should contact their GP/Accident and Emergency department/NHS24. • Individuals/carers should be advised to report suspected adverse reactions to the Medicines and Healthcare products Regulatory Agency (MHRA) using the Yellow Card reporting scheme.

Advice (Written)	The Patient Information Leaflet (PIL) contained in the medicine(s) should be made available to the individual. Where this is unavailable or unsuitable, sufficient information should be given in a language that they can understand.
Identifying and managing possible adverse reactions	There should be a system in place to call an appropriately trained clinician who can deal immediately with a severe contrast agent reaction in the MR/CT environment. If required, the crash or resuscitation team should be called immediately as per department's pathway. Extravasation may be associated with large volumes of contrast agent, high-pressure injection and fragile or damaged veins. Although most injuries caused by extravasation are minor, severe injuries may include skin ulceration, soft tissue necrosis and compartment syndrome. Should there be any concerns about extravasation, consult a medical practitioner immediately. These risks should be communicated with patient, so they are aware of what symptoms to look out for and who to contact. See individual medicine monographs. **This list is not exhaustive. Please also refer to current BNF/BNFC and manufacturers SmPC for details of all potential adverse reactions.** **BNF/BNFC**: BNF British National Formulary - NICE BNF for Children British National Formulary - NICE **SmPC/PIL/Risk Minimisation Material:** Home - electronic medicines compendium (emc) MHRA Products | Home RMM Directory - (emc) If an adverse reaction does occur, give immediate treatment and inform relevant medical practitioner as soon as possible. Document in accordance with locally agreed procedures in the individual's record. Report any suspected adverse reactions using the Yellow Card System. Yellow Card Scheme - MHRA.

Facilities and supplies required	The following are to be available at sites where the medicine is to be administered: • Appropriate storage facilities • An acceptable level of privacy to respect individuals right to confidentiality and safety • Basic airway resuscitation equipment (e.g. Bag valve mask) • Immediate access to Epinephrine (Adrenaline) 1 in 1000 injection • Access to a working telephone • Another competent adult, who can summon urgent emergency support if required should ideally be present • Access to medical support (this may be via the telephone) • Approved equipment for the disposal of used materials • Clean and tidy work areas, including access to hand washing facilities or alcohol hand gel • A copy of this current PGD in print or electronically.

Characteristics of staff authorised to administer medicine(s) under PGD

Professional qualifications	Radiographers registered with the Health and Care Professions Council (HCPC).
Specialist competencies	**Approved by the organisation as:** • Competent to assess the individual's capacity to understand the nature and purpose of the medicine administration in order to give or refuse consent. • Aware of current treatment recommendations and be competent to discuss issues about the medicine with the individual. • Having undertaken appropriate training to carry out clinical assessment of individuals identifying that treatment is required according to the indications listed in the PGD. • Competent to undertake administration of the medicine. • Competent in the recognition and management of anaphylaxis or under the supervision of persons able to respond appropriately to immediate adverse reactions. • Competent to work under this PGD and authorised by name as an approved person to work under the terms of the PGD.
Ongoing training and competency	**All professionals working under this PGD must:** • Have undertaken NoS PGD module training on TURAS Learn. • Have attended basic life support training either face to face or online and updated in-line with individual Board requirements.

	• Have undertaken NHS e-anaphylaxis training or equivalent which covers all aspects of the identification and management of anaphylaxis in-line with Board requirements. • Maintain their skills, knowledge, and their own professional level of competence in this area according to their Code of Professional Conduct. **Note:** All practitioners operating under the PGD are responsible for ensuring they remain up to date with the use of the medicine. Any training needs identified should be discussed with those responsible for authorisation to act under the PGD. • Have knowledge and familiarity of the following; o SmPC for the medicine(s) to be administered in accordance with this PGD.
Responsibilities of professional manager(s)	**Professional manager(s) will be responsible for;** Ensuring that the current PGD is available to all staff providing care under this direction. Ensuring that staff have received adequate training in all areas relevant to this PGD and meet the requirements above. Maintain up to date record of all staff authorised to administer the medicine(s) specified in this direction.

Documentation

Authorisation of administration	Radiographers registered with the Health and Care Professions Council (HCPC). All authorised staff are required to read the PGD and sign the Agreement to Administer Medicines Under PGD (Appendix 1). A Certificate of Authorisation (Appendix 2) signed by the authorising professional/manager should be supplied. This should be held in the individual health professional's records, or as agreed within the individual Health Board.
Record of administration	An electronic or paper record must be completed to allow audit of practice. An electronic/HEPMA record of the screening and subsequent administration, or not of the medicine(s) specified in this PGD should be made in accordance with individual Health Board electronic/HEPMA recording processes.

	If a paper record is used for recording the screening of individuals and the subsequent administration, or not of the medicine(s) specified in this PGD, it should include as a minimum: • Date and time of administration • Individual's name and CHI • Exclusion criteria, record why the medicine was not administered (if applicable) • Record that valid consent to treatment under this PGD was obtained • The name, dose, form, route (batch number, expiry date and site where appropriate for injectable medicines) of the medicine administered/supplied • Advice given, including advice given if excluded or declined treatment under this PGD • Signature and name in capital letters of the healthcare professional who administered the medicine • Record of any adverse effects (advise individuals GP/relevant medical practitioner). Depending on the clinical setting where administration is undertaken, the information should be recorded manually or electronically, in one (or more) of the following systems, as appropriate: • Hand–held records such as red book if appropriate • Individual's GP records if appropriate • Secondary Care Medical Notes • HEPMA • Individual service specific systems. Local policy should be followed with respect to sharing information with the individual's General Practitioner. All records should be clear, legible and contemporaneous and in an easily retrievable format.
Audit	All records of the medicine(s) specified in this PGD will be filed with the normal records of medicines in each practice/service. A designated person within each practice/service where the PGD will be used will be responsible for annual audit to ensure a system of recording medicines administered under a PGD.

References

Electronic Medicines Compendium

Medicine	Date of Revision	Date Accessed
Gadobutrol 1.0mmol/mL solution for injection	25/08/2022	09/01/2024
Iomeron® 400, solution for injection	24/10/2023	09/01/2024
MultiHance® 0.5M solution for injection	16/10/2023	09/01/2024
Gadoxetate Disodium 0.25mmol/mL, solution for injection	07/11/2019	09/01/2024
ProHance® 279.3 mg/mL solution for injection syringe	23/11/2021	09/01/2024

Medicines and Healthcare Products Regulatory Agency (MHRA) http://www.mhra.gov.uk/spc-pil/

Medicine	Date of Revision	Date Accessed
Clariscan 0.5mmol/mL Solution for injection	01/03/2022	09/01/2024
Cyclolux® 279.32 mg/mL Solution for injection	01/08/2022	09/01/2024
Dotarem® 279.32 mg/mL Solution for injection	03/03/2023	09/01/2024
Dotagraf® 0.5mmol/mL (279.32 mg/mL) Solution for injection	01/07/2020	09/01/2024
E-Z-HD® Barium Sulphate 98% W/V Powder for Oral Suspension	01/10/2021	09/01/2024
E-Z-Paque Barium Sulphate 96% W/V Powder for Oral Suspension	15/12/2021	09/01/2024
Omnipaque® 140mg I/mL, 240mg I/mL, 300mg I/mL or 350mg I/mL solution for injection	01/02/2023	09/01/2024

British National Formulary https://www.bnf.org/products/bnf-online/ accessed 01/11/2023

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Appendix 1

Healthcare Professional Agreement to Administer Medicine(s) Under Patient Group Direction

I: _____ (Insert name)

Working within: _____ e.g. Area, Practice

Agree to administer the medicine(s) contained within the following Patient Group Direction:

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I have completed the appropriate training to my professional standards enabling me to administer the medicine(s) under the above direction. I agree not to act beyond my professional competence, nor out with the recommendations of the direction.

Signed: _____

Print Name: _____

Date: _____

Profession: _____

Professional Registration number/PIN: _____

NHS Grampian NHS Highland NHS Orkney NHS Shetland NHS Tayside NHS Eileanan Siar Western Isles

Appendix 2

Healthcare Professionals Authorisation to Administer Medicine(s) Under Patient Group Direction

The Lead manager/Professional of each clinical area is responsible for maintaining records of all clinical areas where this PGD is in use, and to whom it has been disseminated.
The Senior Nurse/Professional who approves a healthcare professional to administer the medicine(s) under this PGD is responsible for ensuring that they are competent, qualified and trained to do so, and for maintaining an up-to-date record of such approved persons.
The Healthcare Professional that is approved to administer the medicine(s) under this PGD is responsible for ensuring that they understand and are qualified, trained and competent to undertake the duties required. The approved person is also responsible for ensuring that administration is carried out within the terms of the direction, and according to their individual code of professional practice and conduct.
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Local clinical area(s) where the listed healthcare professionals will operate under this PGD:

Name of Healthcare Professional	Signature	Date	Name of Manager	Signature	Date

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Name of Healthcare Professional	**Signature**	**Date**	**Name of Manager**	**Signature**	**Date**

Appendix 3 - Medicine Monographs

Medicine **Page**

E-Z-HD® Barium Sulphate 98.45% W/V Powder for Oral Suspension	
Indication	E-Z-HD® is a high-density suspension for use as a radiopaque agent during X-ray visualisation of the upper gastro-intestinal tract (oesophagus, stomach and duodenum). It is designed for optimal use in double contrast X-ray examinations.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals aged 12 years and over.
Exclusion Criteria	As per main PGD inclusion criteria and additionally: • Individuals under 12 years of age • A known or suspected, perforation of the gastrointestinal tract • Known or suspected tracheo-oesophageal fistula • Gastrointestinal haemorrhage • Gastrointestinal ischaemia • Megacolon or toxic megacolon • Necrotising enterocolitis • Severe ileus • Individuals who are dehydrated (general assessment of the individual should be undertaken to ensure they are not dehydrated (e.g. acute/recent vomiting or diarrhoea reported or reduced fluid intake)) • With rare hereditary problems of fructose intolerance • E-Z-HD® should not be administered directly after gastrointestinal surgery • Individuals currently receiving radiotherapy and up to four weeks after radiotherapy to the rectum or prostate • Individuals with new injuries or chemical burns of the gastrointestinal tract.
Precautions and Special Warnings	E-Z-HD® preparations used as radiopaque media contain a number of additives to provide diagnostic properties and individual palatability. Allergic responses following the use of E-Z-HD® suspensions have been reported. Skin irritation, redness, inflammation and hives have been reported for infants and small children following spillage of E-Z-HD® suspension on their skin. A history of bronchial asthma, atopy, as evidenced by hay fever and eczema, a family history of allergy, or a previous reaction to a contrast agent warrant special attention. These responses are thought to be caused by the flavours and/or preservatives used in the product.

E-Z-HD® Barium Sulphate 98.45% W/V Powder for Oral Suspension	
	E-Z-HD® contains sodium among the excipients. Care should be taken in individuals on a controlled sodium diet, especially in individuals with congestive heart failure. Emergency equipment and trained personnel should be immediately available for treatment of a hypersensitivity reaction. E-Z-HD® is not contraindicated in pregnancy; however, a radiographic procedure of the abdomen is unlikely to be performed whilst the individual is pregnant due to risks from the radiation. Since the absorption of barium sulphate is negligible, its use is not contra-indicated during breastfeeding.
Legal Status	E-Z-HD® is a Pharmacy (P) Medicine.
Dose/Maximum total dose	The contents of one prefilled bottle (340g) are dispersed in 65mL of water to produce a 250% w/v suspension. The administered dose of E-Z-HD® will depend on the individual in question and the section of the gastrointestinal tract to be viewed. **Maximum dose of one 340g prefilled bottle only allowed under this PGD.**
Frequency of dose/Duration of treatment	Once only during procedure.
Maximum or minimum treatment period	See Frequency of dose/Duration of treatment section above.
Route/Method of Administration	Oral administration E-Z-HD® must be administered orally. The powder must be reconstituted prior to administration as follows; 1. Add 65mL of water to bottle. 2. Secure lid and invert bottle, tapping base to loosen powder. 3. Shake well for 10-20 seconds. Leave until required. 4. Immediately before giving to individual to drink shake again for 10-20 seconds.

E-Z-HD® Barium Sulphate 98.45% W/V Powder for Oral Suspension	
	Any unused, opened product or waste material should be disposed of in accordance with local requirements. If a suitable gas producing agent is required, this should be administered prior to the reconstituted suspension being swallowed by the individual. As per the SmPC E-Z-HD® should be administered immediately following reconstitution and must not be stored.
Quantity to be administered	One prefilled 340g bottle.
Potential Adverse Reactions	The most frequently reported undesirable effects include; diarrhoea, nausea, abdominal pain/distention, constipation. Skin and subcutaneous reactions such as urticaria, erythema and rash have been commonly reported.
Advice	After administration advise individual to: • Maintain adequate hydration • Seek medical attention for worsening of constipation or slow gastrointestinal passage • Seek medical attention for any delayed onset of hypersensitivity: rash, urticaria, or respiratory difficulty.
Follow up (If applicable)	Individuals who have undergone barium meal, barium swallow, or video-fluoroscopy examinations should remain under observation until they have been seen to recover from the procedure. It is not possible to specify an exact length of time, but individual should remain on the premises for at least 10-15 minutes. Individuals should not leave if they are feeling unwell without speaking to the GI Advanced Practice Radiographer first. If necessary, a doctor should be contacted for advice. If any complications arise during or immediately after the procedure, then the opinion of a consultant or supervising radiologist should be sought.
Storage	Do not store above 25° C.

E-Z-Paque® Barium Sulphate 96% W/V Powder for Oral Suspension	
Indication	E-Z-Paque® is indicated for use as a positive contrast medium for radiographic visualisation of the gastrointestinal tract.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals aged 12 years and over.
Exclusion Criteria	As per main PGD inclusion criteria and additionally: • Individuals under 12 years of age • A known or suspected, perforation of the gastrointestinal tract • Known or suspected tracheo-oesophageal fistula • Gastrointestinal haemorrhage • Gastrointestinal ischaemia • Megacolon or toxic megacolon • Necrotising enterocolitis • Severe ileus • Individuals who are dehydrated (general assessment of the individual should be undertaken to ensure they are not dehydrated (e.g. acute/recent vomiting or diarrhoea reported or reduced fluid intake)) • Individuals with rare hereditary problems of fructose intolerance • E-Z-Paque® should not be administered directly after gastrointestinal surgery • Individuals currently receiving radiotherapy and up to four weeks after radiotherapy to the rectum or prostate • Individuals with new injuries or chemical burns of the gastrointestinal tract.
Precautions and Special Warnings	E-Z-Paque® preparations used as radiopaque media contain a number of additives to provide diagnostic properties and individual palatability. Allergic responses following the use of E-Z-Paque® suspensions have been reported. Skin irritation, redness, inflammation and hives have been reported for infants and small children following spillage of E-Z-Paque® suspension on their skin. A history of bronchial asthma, atopy, as evidenced by hay fever and eczema, a family history of allergy, or a previous reaction to a contrast agent warrant special attention. These responses are thought to be caused by the flavours and/or preservatives used in the product.

E-Z-Paque® Barium Sulphate 96% W/V Powder for Oral Suspension	
	E-Z-Paque® contains sodium among the excipients. Care should be taken in individuals on a controlled sodium diet, especially in individuals with congestive heart failure. Emergency equipment and trained personnel should be immediately available for treatment of a hypersensitivity reaction. E-Z-Paque® is not contraindicated in pregnancy, however a radiographic procedure of the abdomen is unlikely to be performed whilst the individual is pregnant due to risks from the radiation. Since the absorption of barium sulphate is negligible, its use is not contra-indicated during breastfeeding.
Legal Status	E-Z-Paque® is a Pharmacy (P) Medicine.
Dose/Maximum total dose	Single contrast of the oesophagus, stomach and duodenum to be given orally 175mL to 300mL of suspension at 100% w/v. Small bowel – To be given orally 250mL to 300mL of suspension at 60% w/v. The actual administered dose should be determined from experience by the Advanced Practice Radiographer. **Maximum dose of one 177g unit dose bottle only allowed under this PGD.**
Frequency of dose/Duration of treatment	Once only during procedure.
Maximum or minimum treatment period	See Frequency of dose/Duration of treatment section above.
Route/Method of Administration	Oral administration Add water to approximately 2.5cm above barium level. Secure lid, invert bottle and shake vigorously. Add more water to desired % w/v line on bottle. Replace lid and shake for 30 seconds.

E-Z-Paque® Barium Sulphate 96% W/V Powder for Oral Suspension	
	Important: Always re-shake just prior to administration to the individual. Any unused, opened product or waste material should be disposed of in accordance with local requirements. As per the SmPC E-Z-Paque® should be administered immediately following reconstitution and must not be stored.
Quantity to be administered	See Dose/Maximum total dose section above.
Potential Adverse Reactions	The most frequently reported undesirable effects include; diarrhoea, nausea, abdominal pain/distention, constipation. Skin and subcutaneous reactions such as urticaria, erythema and rash have been commonly reported. Following oral administration, aspiration, with pulmonary complications, may occur and may be fatal in rare cases.
Advice	After administration advise individuals to: • Maintain adequate hydration • Seek medical attention for worsening of constipation or slow gastrointestinal passage • Seek medical attention for any delayed onset of hypersensitivity: rash, urticaria, or respiratory difficulty.
Follow up (If applicable)	Individual who have undergone barium meal, barium swallow, small bowel study or video-fluoroscopy examinations should remain under observation until they have been seen to recover from the procedure. It is not possible to specify an exact length of time, but individual should remain on the premises for at least 10-15 minutes. Individual should not leave if they are feeling unwell without speaking to the Advanced Practice Radiographer first. If necessary, a doctor should be contacted for advice. If any complications arise during or immediately after the procedure then the opinion of a consultant or supervising radiologist should be sought.
Storage	Do not store above 25° C.

Gadobenate Dimeglumine (MultiHance®) 0.5M solution for injection	
Indication	Imaging procedures within the Radiology/Radiotherapy Department(s) to improve the visualisation of soft tissue structures in individuals undergoing an MRI scan. **Note:** Follow local individual Board protocols.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals aged 2 years and older. • Individuals without an identified risk for renal impairment and those with an estimated glomerular filtration rate (eGFR) of ≥30mL/min/1.73m^2.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Individuals aged less than 2 years of age • Previous adverse drug reaction (allergic, hypersensitivity or other) after administration of a contrast agent • Known renal impairment with an estimated glomerular filtration rate (eGFR) of <30mL/min/1.73m^2 • Liver transplantation or peri-operative liver transplantation period.
Precautions and Special Warnings	• **Previous history of any adverse drug reaction to an intravascular contrast agent is not listed in the exclusion criteria**. Caution should be exercised where there is a known previous moderately severe reaction to intravascular contrast such as bronchospasm or urticaria requiring treatment or severe reactions (e.g. laryngeal or angioneurotic oedema, severe bronchospasm, or collapse) to intravascular contrast. Any individual known to have had a previous moderately severe or severe reaction to contrast agent should be discussed with the supervising radiologist, clinical oncologist (or other medically qualified imaging expert) prior to administration of contrast agents under this PGD. If the practitioner acting under this PGD decides to continue to administer the named agent under the PGD a full record of the decision must be made in the individual's clinical record. • Breastfeeding. • History of severe/multiple allergies including food allergies, hay fever and urticaria that has required medical intervention. • Dehydration – General assessment of the individual should be undertaken to ensure they are not dehydrated (e.g. acute/recent vomiting or diarrhoea reported or reduced fluid intake).

Gadobenate Dimeglumine (MultiHance®) 0.5M solution for injection	
	• Caution is advised in individuals with cardiovascular disease. • Uncorrected hypokalaemia.
Legal Status	Gadobenate Dimeglumine (MultiHance®) 0.5M solution for injection is a Prescription-only Medicine (POM).
Dose/Maximum total dose	0.05mmol/kg of 0.5M solution. The lowest dose that provides sufficient enhancement for diagnostic purposes should be used. **Maximum total dose should be as per manufacturer's guidelines and local Board protocols.**
Frequency of dose/Duration of treatment	Single dose for procedure indicated. However, repeated doses may be given under PGD in line with the following guidance (as a separate episode of care): • In individuals with an eGFR of ≥30mL/min/1.73m^2 a repeat dose is permitted after 4 hours.
Maximum or minimum treatment period	See Frequency of dose/Duration of treatment section above.
Route/Method of Administration	Intravenous, Injected either by hand or pump.
Quantity to be administered	Dependent on clinical requirement.
Potential Adverse Reactions	Refer to the product Summary of Product Characteristics (SmPC) for full details of known adverse effects. The below list details only commonly reported adverse effects (>1 in 100) and does not represent all the product's known adverse effects: • Nausea and/or vomiting • Headache • Injection site reactions (e.g. pain, coldness, warmth).

Gadobenate Dimeglumine (MultiHance®) 0.5M solution for injection	
Advice	• If relevant advise on the management of injection site/s and any infection control or self-management required. • Individuals should be informed that whilst uncommon a mild allergic reaction such as a rash, itchiness, feeling hot or cold, runny nose, watery eyes can occur and that they must inform a healthcare professional if they experience these symptoms.
Follow up (If applicable)	• Individuals should be assessed prior to being discharged from the department for any adverse effects from the administered agent or for any signs of extravasation. • Advise of the possible adverse effects and where to seek advice in the event of a suspected adverse reaction developing.
Storage	• Stock must be securely stored in a lockable cupboard. • Storage conditions - protect from light and freezing. • Use immediately after preparation and discard any unused product in accordance with local waste protocols. • Contrast agent should ideally be warmed to body temperature prior to administration.

Gadobutrol 1.0mmol/mL solution for injection	
Indication	Imaging procedures within the Radiology/Radiotherapy Department(s) to improve the visualisation of soft tissue structures in individuals undergoing an MRI scan. **Note:** Follow local individual Board protocols.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals and infants of all ages • Individuals without an identified risk for renal impairment and those with an estimated glomerular filtration rate (eGFR) of $\geq$30mL/min/1.73m^2.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Previous adverse drug reaction (allergic, hypersensitivity or other) after administration of gadobutrol or a contrast agent of a similar nature or to any component of gadobutrol • Pregnancy • Known renal impairment with an estimated glomerular filtration rate (eGFR) of <30mL/min/1.73m^2 • Liver transplantation or peri-operative liver transplantation period.
Precautions and Special Warnings	• **Previous history of any adverse drug reaction to an intravascular contrast agent not listed in the exclusion criteria**. Caution should be exercised where there is a known previous moderately severe reaction to intravascular contrast such as bronchospasm or urticaria requiring treatment or severe reactions (e.g. laryngeal or angioneurotic oedema, severe bronchospasm or collapse) to intravascular contrast. Any individual known to have had a previous moderately severe or severe reaction to contrast agent should be discussed with the supervising radiologist, clinical oncologist (or other medically qualified imaging expert) prior to administration of contrast agents under this PGD. If the practitioner acting under this PGD decides to continue to administer the named agent under the PGD a full record of the decision must be made in the individual's clinical record. • Breastfeeding. • History of severe/multiple allergies including food allergies, hay fever and urticaria that has required medical intervention.

Gadobutrol 1.0mmol/mL solution for injection	
	• Dehydration – General assessment of the individual should be undertaken to ensure they are not dehydrated (e.g. acute/recent vomiting or diarrhoea reported or reduced fluid intake). • As with other gadolinium containing contrast agents' special precaution is necessary in individuals with a low threshold for seizures.
Legal Status	Gadobutrol is a Prescription-only Medicine (POM).
Dose/Maximum total dose	0.1mmol/kg. **Maximum total dose should be as per manufacturer's guidelines and local Board protocols.**
Frequency of dose/Duration of treatment	Single dose for procedure indicated. However, repeated doses may be given under PGD in line with the following guidance (as a separate episode of care): • In paediatrics there should be 7 days between injections of Gadobutrol.
Maximum or minimum treatment period	See Frequency of dose/Duration of treatment section above.
Route/Method of Administration	Intravenous, injected either by hand or pump.
Quantity to be administered	Dependent on clinical requirement.
Potential Adverse Reactions	Refer to the product Summary of Product Characteristics (SmPC) for full details of known adverse effects. The below list details only commonly reported adverse effects (>1 in 100) and does not represent all the product's known adverse effects: • Nausea and/or vomiting • Headache • Dizziness • Injection site reactions (e.g. pain, coldness, warmth) • Dysgeusia and feeling hot.

Gadobutrol 1.0mmol/mL solution for injection	
Advice	• If relevant advise on the management of injection site/s and any infection control or self-management required. • Individuals should be informed that whilst uncommon a mild allergic reaction such as a rash, itchiness, feeling hot or cold, runny nose, watery eyes can occur and that they must inform a healthcare professional if they experience these symptoms.
Follow up (If applicable)	• Individuals should be assessed prior to being discharged from the department for any adverse effects from the administered agent or for any signs of extravasation. • Advise of the possible adverse effects and where to seek advice in the event of a suspected adverse reaction developing.
Storage	• Stock must be securely stored in a lockable cupboard. • Storage conditions - protect from light and freezing. Store between 15 and 30°C. • After the vial/bottle has been opened or the pre-filled syringe has been prepared for use gadobutrol remains stable for 24 hours at 20-25°C after which time it must be discarded. However from a microbiological point of view, the product should be used immediately. If not used immediately, in-use storage times and conditions prior to use are the responsibility of the user. • Contrast agent should ideally be warmed to body temperature prior to administration.

Gadoteric Acid Meglumine (Dotarem®, Clariscan®, Dotagraf® or Cyclolux®) 0.5mmol/mL containing 279.3mg/mL Gadoteric Acid, solution for injection	
Indication	Imaging procedures within the Radiology/Radiotherapy Department(s) to allow the visualisation of soft tissue structures in individuals undergoing an MRI scan. **Note:** Follow local individual Board protocols.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals and infants of all ages • Individuals without an identified risk for renal impairment and those with an estimated glomerular filtration rate (eGFR) of ≥30mL/min/1.73m^2.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Previous adverse drug reaction (allergic, hypersensitivity or other) after administration of a contrast agent • Pregnancy • Known renal impairment with an estimated glomerular filtration rate (eGFR) of <30mL/min/1.73m^2 • Liver transplantation or peri-operative liver transplantation period • Asthma which is poorly controlled at the time of the procedure.
Precautions and Special Warnings	• **Previous history of any adverse drug reaction to an intravascular contrast agent not listed in the exclusion criteria**. Caution should be exercised where there is a known previous moderately severe reaction to intravascular contrast such as bronchospasm or urticaria requiring treatment or severe reactions (e.g. laryngeal or angioneurotic oedema, severe bronchospasm or collapse) to intravascular contrast. Any individual known to have had a previous moderately severe or severe reaction to contrast agent should be discussed with the supervising radiologist, clinical oncologist (or other medically qualified imaging expert) prior to administration of contrast agents under this PGD. If the practitioner acting under this PGD decides to continue to administer the named agent under the PGD a full record of the decision must be made in the individual's clinical record. • Breastfeeding. • History of severe/multiple allergies including food allergies, hay fever and urticaria that has required medical intervention.

Gadoteric Acid Meglumine (Dotarem®, Clariscan®, Dotagraf® or Cyclolux®) 0.5mmol/mL containing 279.3mg/mL Gadoteric Acid, solution for injection	
	• Dehydration – General assessment of the individual should be undertaken to ensure they are not dehydrated (e.g. acute/recent vomiting or diarrhoea reported or reduced fluid intake). • Like with other gadolinium containing contrast agents' special precaution is necessary in individuals with a low threshold for seizures. Precautionary measures should be taken, e.g. close monitoring. • Emergency medical assistance must be readily available and resuscitation equipment must be at hand.
Legal Status	Gadoteric Acid Meglumine 0.5mmol/mL, solution for injection is a Prescription-only Medicine (POM).
Dose/Maximum total dose	0.2mmol/kg. The lowest dose that provides sufficient enhancement for diagnostic purposes should be used. **Maximum total dose allowed under this PGD should be as per manufacturer's guidelines and local Board protocols.**
Frequency of dose/Duration of treatment	Repeated doses may be given under PGD in line with the following guidance (as a separate episode of care): • In individuals with an eGFR of ≥30mL/min/1.73m^2 a repeat dose is permitted after 4 hours.
Maximum or minimum treatment period	See Frequency of dose/Duration of treatment section above.
Route/Method of Administration	Intravenous injection by hand or by pump in accordance with local protocol.
Quantity to be administered	Dependent on clinical requirement.

Gadoteric Acid Meglumine (Dotarem®, Clariscan®, Dotagraf® or Cyclolux®) 0.5mmol/mL containing 279.3mg/mL Gadoteric Acid, solution for injection	
Potential Adverse Reactions	Refer to the product Summary of Product Characteristics (SmPC) for full details of known adverse effects. The below list details only commonly reported adverse effects (>1 in 100) and does not represent all the product's known adverse effects: • Nausea • Headache • Pruritus and hypersensitivity reactions.
Advice	• If relevant advise on the management of injection site/s and any infection control or self-management required. • Individuals should be informed that whilst uncommon a mild allergic reaction such as a rash, itchiness, feeling hot or cold, runny nose, watery eyes can occur and that they must inform a healthcare professional if they experience these symptoms.
Follow up (If applicable)	• Individuals should be assessed prior to being discharged from the department for any adverse effects from the administered agent or for any signs of extravasation. • Advise of the possible adverse effects and where to seek advice in the event of a suspected adverse reaction developing.
Storage	• Stock must be securely stored in a lockable cupboard. • Store at room temperature and do not freeze. • Contrast agent ideally should be warmed to body temperature prior to administration.

Gadoteridol (ProHance®) 279.3mg/mL, solution for injection	
Indication	Imaging procedures within the Radiology/Radiotherapy Department(s) to improve the visualisation of soft tissue structures in individuals undergoing an MRI scan. **Note:** Follow local individual Board protocols.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals 2 years of age and over • Individuals without an identified risk for renal impairment and those with an estimated glomerular filtration rate (eGFR) of ≥30mL/min/1.73m^2.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Previous adverse drug reaction (allergic, hypersensitivity or other) after administration of a contrast agent • Known renal impairment with an estimated glomerular filtration rate (eGFR) of <30mL/min/1.73m^2 • Liver transplantation or peri-operative liver transplantation period • Asthma which is poorly controlled at the time of the procedure.
Precautions and Special Warnings	• **Previous history of any adverse drug reaction to an intravascular contrast agent not listed in the exclusion criteria**. Caution should be exercised where there is a known previous moderately severe reaction to intravascular contrast such as bronchospasm or urticaria requiring treatment or severe reactions (e.g. laryngeal or angioneurotic oedema, severe bronchospasm or collapse) to intravascular contrast. Any individual known to have had a previous moderately severe or severe reaction to contrast agent should be discussed with the supervising radiologist, clinical oncologist (or other medically qualified imaging expert) prior to administration of contrast agents under this PGD. If the practitioner acting under this PGD decides to continue to administer the named agent under the PGD a full record of the decision must be made in the individual's clinical record. • Breastfeeding. • History of severe/multiple allergy including food allergies, hay fever and urticaria that has required medical intervention. • Dehydration – General assessment of the individual should be undertaken to ensure they are not dehydrated (e.g. acute/recent vomiting or diarrhoea reported or reduced fluid intake).

Gadoteridol (ProHance®) 279.3mg/mL, solution for injection	
	• Like with other gadolinium containing contrast agents special precaution is necessary in individuals with a low threshold for seizures. Precautionary measures should be taken, e.g. close monitoring.
Legal Status	Gadoteridol (ProHance®) 279.3 mg/mL, solution for injection is a Prescription-only Medicine (POM).
Dose/Maximum total dose	0.1mmol/kg. The lowest dose that provides sufficient enhancement for diagnostic purposes should be used. **Maximum total dose allowed under this PGD should be as per manufacturer's guidelines and local Board protocols.**
Frequency of dose/Duration of treatment	Single dose for procedure indicated. However, repeated doses may be given under PGD in line with the following guidance (as a separate episode of care): • In individuals with an eGFR of ≥30mL/min/1.73m^2 a repeat dose is permitted after 4 hours.
Maximum or minimum treatment period	See Frequency of dose/Duration of treatment section above.
Route/Method of Administration	Intravenous injection by hand or by pump in accordance with local protocol.
Quantity to be administered	Dependent on clinical requirement.
Potential Adverse Reactions	Refer to the product Summary of Product Characteristics (SmPC) for full details of known adverse effects. The below list details only commonly reported adverse effects (>1 in 100) and does not represent all the product's known adverse effects: • Nausea

Gadoteridol (ProHance®) 279.3mg/mL, solution for injection	
Advice	• If relevant advise on the management of injection site/s and any infection control or self-management required. • Individuals should be informed that whilst uncommon a mild allergic reaction such as a rash, itchiness, feeling hot or cold, runny nose, watery eyes can occur and that they must inform a healthcare professional if they experience these symptoms.
Follow up (If applicable)	• Individuals should be assessed prior to being discharged from the department for any adverse effects from the administered agent or for any signs of extravasation. • Advise of the possible adverse effects and where to seek advice in the event of a suspected adverse reaction developing.
Storage	• Stock must be securely stored in a lockable cupboard. • Store at room temperature (15-30°C). • Do not freeze. • Contrast agent should ideally be warmed to body temperature prior to administration.

Gadoxetate Disodium 0.25mmol/mL, Solution for Injection	
Indication	Imaging procedures within the Radiology/Radiotherapy Department(s) to improve the visualisation of soft tissue structures in individuals undergoing an MRI scan. **Note:** Follow local individual Board protocols.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals aged 18 years of age and over • Individuals without an identified risk for renal impairment and those with an estimated glomerular filtration rate (eGFR) of $\geq$30mL/min/1.73m^2.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Individuals aged less than 18 years • Previous adverse drug reaction (allergic, hypersensitivity or other) after administration of an MRI contrast agent • Pregnancy • Known renal impairment with an estimated glomerular filtration rate (eGFR) of <30mL/min/1.73m^2 • Liver transplantation or peri-operative liver transplantation period.
Precautions and Special Warnings	• **Previous history of any adverse drug reaction to an intravascular contrast agent not listed in the exclusion criteria**. Caution should be exercised where there is a known previous moderately severe reaction to intravascular contrast such as bronchospasm or urticaria requiring treatment or severe reactions (e.g. laryngeal or angioneurotic oedema, severe bronchospasm or collapse) to intravascular contrast. Any individual known to have had a previous moderately severe or severe reaction to contrast agent should be discussed with the supervising radiologist, clinical oncologist (or other medically qualified imaging expert) prior to administration of contrast agents under this PGD. If the practitioner acting under this PGD decides to continue to administer the named agent under the PGD a full record of the decision must be made in the individual's clinical record. • Breastfeeding. • History of severe/multiple allergies including food allergies, hay fever and urticaria that has required medical intervention. • Dehydration – General assessment of the individual should be undertaken to ensure they are not dehydrated (e.g. acute/recent vomiting or diarrhoea reported or reduced fluid intake).

Gadoxetate Disodium 0.25mmol/mL, Solution for Injection	
	• Caution should be exercised when Gadoxetate Disodium is administered to individuals with severe cardiovascular problems because only limited data are available so far.
Legal Status	Gadoxetate Disodium 0.25mmol/mL, solution for injection is a Prescription-only Medicine (POM).
Dose/Maximum total dose	0.1mL/kg of the 0.25mmol/mL solution. The lowest dose that provides sufficient enhancement for diagnostic purposes should be used. **Maximum total dose should be as per manufacturer's guidelines and local Board protocols.**
Frequency of dose/Duration of treatment	Single dose for procedure indicated. However, repeated doses may be given under PGD in line with the following guidance (as a separate episode of care): • In individuals with an eGFR of ≥30mL/min/1.73m^2 a repeat dose is permitted after 4 hours.
Maximum or minimum treatment period	See Frequency of dose/Duration of treatment section above.
Route/Method of Administration	Intravenous, Injected either by hand or pump.
Quantity to be administered	Dependent on clinical requirement.
Potential Adverse Reactions	Refer to the product Summary of Product Characteristics (SmPC) for full details of known adverse effects. The below list details only commonly reported adverse effects (>1 in 100) and does not represent all the product's known adverse effects: • Nausea • Headache.

Gadoxetate Disodium 0.25mmol/mL, Solution for Injection	
Advice	• If relevant advise on the management of injection site/s and any infection control or self-management required. • Individuals should be informed that whilst uncommon a mild allergic reaction such as a rash, itchiness, feeling hot or cold, runny nose, watery eyes can occur and that they must inform a healthcare professional if they experience these symptoms.
Follow up (If applicable)	• Individuals should be assessed prior to being discharged from the department for any adverse effects from the administered agent or for any signs of extravasation. • Advise of the possible adverse effects and where to seek advice in the event of a suspected adverse reaction developing.
Storage	• Stock must be securely stored in a lockable cupboard. • Contrast agent should ideally be warmed to body temperature prior to administration.

Iohexol (Omnipaque®) 140mg I/mL, 240mg I/mL, 300mg I/mL or 350mg I/mL solution for injection	
Indication	Imaging procedures within the Radiology/ Radiotherapy Department to improve the visualisation of blood vessels, solid organs and other organs. **Note:** Follow local individual Board protocols.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals and infants of all ages • Individuals without an identified risk for renal impairment and those with an estimated glomerular filtration rate (eGFR) of ≥30mL/min/1.73m^2.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Previous adverse drug reaction (allergic, hypersensitivity or other) after administration of a contrast agent • Known renal impairment with an estimated glomerular filtration rate (eGFR) of <30mL/min/1.73m^2 • Any history documented in the radiology/imaging referral/request or highlighted during the checklist of: o Manifest thyrotoxicosis o Congestive heart failure, severe cardiac disease or pulmonary hypertension o Homocystinuria o Sickle cell disease o Severe liver impairment or peri-operative liver transplant period o Asthma which is poorly controlled at the time of procedure.
Precautions and Special Warnings	• **Previous history of any adverse drug reaction to an intravascular contrast agent not listed in the exclusion criteria**. Caution should be exercised where there is a known previous moderately severe reaction to intravascular contrast such as bronchospasm or urticaria requiring treatment or severe reactions (e.g. laryngeal or angioneurotic oedema, severe bronchospasm or collapse) to intravascular contrast. Any individual known to have had a previous moderately severe or severe reaction to contrast agent should be discussed with the supervising radiologist, clinical oncologist (or other medically qualified imaging expert) prior to administration of contrast agents under this PGD. If the practitioner

Iohexol (Omnipaque®) 140mg I/mL, 240mg I/mL, 300mg I/mL or 350mg I/mL solution for injection	
	acting under this PGD decides to continue to administer the named agent under the PGD a full record of the decision must be made in the individual's clinical record. • Any history documented in the radiology referral/request of paraproteinaemias (multiple myeloma and Waldenstrom's macroglobulinaemia – increased risk of renal impairment) or hypercalcaemia. • Myeloma. • Breastfeeding. • History of severe/multiple allergies including food allergies, hay fever and urticaria that has required medical intervention. • Dehydration – General assessment of the individual should be undertaken to ensure they are not dehydrated (e.g. acute/recent vomiting or diarrhoea reported or reduced fluid intake). • Care should be taken in individuals with serious cardiac disease /cardio-circulatory disease and pulmonary hypertension. • Like with other contrast agents special precaution is necessary in individuals with a low threshold for seizures. Precautionary measures should be taken, e.g. close monitoring. • The administration of iodinated contrast media may aggravate the symptoms of myasthenia gravis. • There is a risk of the development of lactic acidosis when iodinated contrast agents are administered to diabetic individuals treated with metformin, particularly in those with impaired renal function.
Legal Status	Iohexol (Omnipaque®) 140mg I/mL, 240mg I/mL, 300mg I/mL or 350mg I/mL solution for injection are Prescription-only Medicines (POM).
Dose/Maximum total dose	The following are dose guidelines for intravenous use as set out in the SmPC for Iohexol (Omnipaque® 140, 240, 300 and 350): **Note:** I/mL stands for iodine concentration per mL. The term b.w. in the table below denotes body weight.

Iohexol (Omnipaque®) 140mg I/mL, 240mg I/mL, 300mg I/mL or 350mg I/mL solution for injection

Indication	Concentration	Volume
Urography		
Adults	300mg I/mL or 350mg I/mL	40-80 mL
Children <7 kg	240mg I/mL or 300mg I/mL	4mL/kg b.w. or 3mL/kg b.w.
Children >7kg	240mg I/mL or 300mg I/mL	3 mL/kg b.w. or 2 mL/kg b.w.
Digital subtraction angiography		
Adults	300mg I/mL or 350mg I/mL	Up to 3mL per kg b.w. (20 - 60mL/inj)
Children	140mg I/mL	Dependent upon age, weight and pathology.
CT enhancement		
Adults	140mg I/mL or 240mg I/mL or 300mg I/mL or 350mgI/mL	100-400mL 100-250mL 100-200mL 100-150mL

The lowest dose that provides sufficient enhancement for diagnostic purposes should be used.

Maximum total dose allowed under this PGD should be as per manufacturer's guidelines and local Board protocols.

Frequency of dose/Duration of treatment

Single dose for procedure indicated. However, repeated doses may be given under PGD in line with the following guidance (as a separate episode of care):

- In individuals with an eGFR of ≥30mL/min/1.73m^2 a repeat dose is permitted after 4 hours.

Iohexol (Omnipaque®) 140mg I/mL, 240mg I/mL, 300mg I/mL or 350mg I/mL solution for injection	
Maximum or minimum treatment period	See Frequency of dose/Duration of treatment section above.
Route/Method of Administration	Intravenous injection by hand or by pump in accordance with local protocol.
Quantity to be administered	Dependent on clinical requirement.
Potential Adverse Reactions	Refer to the product Summary of Product Characteristics (SmPC) for full details of known adverse effects. The below list details only commonly reported adverse effects (>1 in 100) and does not represent all the product's known adverse effects: • Feeling hot/flushed • Feeling of urination • Nausea • Pain • Vomiting • Transient change in respiratory rate/respiratory distress. **Note:** There is a risk of the development of lactic acidosis when iodinated contrast agents are administered to diabetic patients treated with metformin, particularly in those with impaired renal function.
Advice	• Individuals should be informed that they may experience a metallic taste, hot flush or a sensation of passing urine during administration and that this is normal and transient. • Individuals should be advised to drink plenty of fluid following the procedure if possible. • If relevant advise on the management of injection site/s and any infection control or self-management required. • Individuals should be informed that whilst uncommon a mild allergic reaction such as a rash, itchiness, feeling hot or cold, runny nose, watery eyes can occur and that they must inform a healthcare professional if they experience these symptoms.

Iohexol (Omnipaque®) 140mg I/mL, 240mg I/mL, 300mg I/mL or 350mg I/mL solution for injection	
Follow up (If applicable)	• Individuals should be assessed prior to being discharged from the department for any adverse effects from the administered agent or for any signs of extravasation. • Advise of the possible adverse effects and where to seek advice in the event of a suspected adverse reaction developing.
Storage	• Store below 30°C and store in outer carton to protect from light. • Stock must be securely stored in a lockable cupboard and be protected from light. • Contrast agent should be warmed to body temperature prior to administration.

Iomeprol (Iomeron® 400) solution for injection	
Indication	Imaging procedures within the Radiology/Radiotherapy Department to improve the visualisation of blood vessels, solid organs and other organs. **Note:** Follow local individual Board protocols.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals aged 18 years of age and over • Individuals without an identified risk for renal impairment and those with an estimated glomerular filtration rate (eGFR) of ≥30mL/min/1.73m^2.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Previous adverse drug reaction (allergic, hypersensitivity or other) after administration of a contrast agent • Known renal impairment with an estimated glomerular filtration rate (eGFR) of <30mL/min/1.73m^2 • Pregnancy • Any history documented in the radiology/imaging referral/request or obtained while completing patient checklist of: o Manifest thyrotoxicosis o Congestive heart failure, severe cardiac disease or pulmonary hypertension o Homocystinuria o Sickle cell disease o Severe liver impairment or peri-operative liver transplant period o Asthma which is poorly controlled at the time of procedure o Myeloma.
Precautions and Special Warnings	• **Previous history of any adverse drug reaction to an intravascular contrast agent not listed in the exclusion criteria**. Caution should be exercised where there is a known previous moderately severe reaction to intravascular contrast such as bronchospasm or urticaria requiring treatment or severe reactions (e.g. laryngeal or angioneurotic oedema, severe bronchospasm or collapse) to intravascular contrast. Any individual known to have had a previous moderately severe or severe reaction to contrast agent should be discussed with the supervising radiologist, clinical oncologist (or other medically qualified imaging expert) prior to administration of contrast agents under this PGD. If the practitioner acting under this PGD decides to continue to administer

Iomeprol (Iomeron® 400) solution for injection	
	the named agent under the PGD a full record of the decision must be made in the individual's clinical record. • Any history documented in the radiology referral/request of paraproteinaemias (multiple myeloma and Waldenstrom's macroglobulinaemia – increased risk of renal impairment) or hypercalcaemia. • Breastfeeding. • History of severe/multiple allergies including food allergies, hay fever and urticaria that has required medical intervention. • Dehydration – General assessment of the individual should be undertaken to ensure they are not dehydrated (e.g. acute/recent vomiting or diarrhoea reported or reduced fluid intake). • Care should be taken in individuals with serious cardiac disease /cardio-circulatory disease and pulmonary hypertension. • Like with other contrast agents special precaution is necessary in individuals with a low threshold for seizures. Precautionary measures should be taken, e.g. close monitoring. • The administration of iodinated contrast media may aggravate the symptoms of myasthenia gravis. • There is a risk of the development of lactic acidosis when iodinated contrast agents are administered to diabetic individuals treated with metformin, particularly in those with impaired renal function. • Individuals treated with interleukin-2 and interferons less than two weeks previously have been associated with an increased risk for delayed reactions. A specific risk of delayed skin rash is associated with Interleukin-2 therapy.
Legal Status	Iomeprol (Iomeron® 400) solution for injection is a Prescription-only Medicine (POM).

<table>
<tr><th colspan="2">Iomeprol (Iomeron® 400) solution for injection</th></tr>
<tr><td>Dose/Maximum total dose</td><td>The following are dose guidelines for intravenous use as set out in the SmPC for Iohexol (Iomeron® 400):

CT enhancement in adults (according to body weight, size and examination being done)

<table><tr><th>Examination</th><th>Volume of Iomeron® 400 (25-150mLs)</th></tr><tr><td>Cardiac test bolus</td><td>25-35mLs</td></tr><tr><td>Cardiac acquisition</td><td>75mLs</td></tr><tr><td>BMI >30</td><td>Up to 150mLs</td></tr></table>
The lowest dose that provides sufficient enhancement for diagnostic purposes should be used.

Maximum total dose allowed under this PGD is 150mLs.</td></tr>
<tr><td>Frequency of dose/Duration of treatment</td><td>Single dose for procedure indicated. However, repeated doses may be given under PGD in line with the following guidance (as a separate episode of care):
Individuals with normal or moderately reduced renal function (eGFR >30 and <60mL/min/1.73 m^2) - 75% of iodine-based contrast medium is excreted by 4 hours after administration. Therefore, there should be 4 hours between injections of iodine-based contrast medium.</td></tr>
<tr><td>Maximum or minimum treatment period</td><td>See Frequency of dose/Duration of treatment section above.</td></tr>
<tr><td>Route/Method of Administration</td><td>Intravenous injection by hand or by pump in accordance with local protocol.</td></tr>
<tr><td>Quantity to be administered</td><td>Dependent on clinical requirement.</td></tr>
<tr><td>Potential Adverse Reactions</td><td>Refer to the product Summary of Product Characteristics (SmPC) for full details of known adverse effects.

The below list details only commonly reported adverse effects (>1 in 100) and does not represent all the product’s known adverse effects:
Feeling hot/flushed.</td></tr>
</table>

Iomeprol (Iomeron® 400) solution for injection	
Advice	• Individuals should be informed that they may experience a metallic taste, hot flush or a sensation of passing urine during administration and that this is normal and transient. • Individuals should be advised to drink plenty of fluid following the procedure if possible. • If relevant advice on the management of injection site/s and any infection control or self-management required. • Individuals should be informed that whilst uncommon a mild allergic reaction such as a rash, itchiness, feeling hot or cold, runny nose, watery eyes can occur and that they must inform a healthcare professional if they experience these symptoms.
Follow up (If applicable)	• Individuals should be assessed prior to being discharged from the department for any adverse effects from the administered agent or for any signs of extravasation. • Advise of the possible adverse effects and where to seek advice in the event of a suspected adverse reaction developing.
Storage	• Stock must be securely stored in a lockable cupboard and be protected from light. • Contrast agent should be warmed to body temperature prior to administration.