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 PGD Formulary By Radiographers Working Within NHS Grampian, Highland, Orkney, Shetland, Tayside And Western Isles

Lead Author: Superintendent Radiographer, NHS Grampian	**Consultation Group**: See relevant page in the PGD	**Approver:** NoS PGD Group **Authorisation:** NHS Grampian
Signature: 		**Signature:** 
NoS Identifier: NoS/PGD/Radiographers_MF/1453	**Review Date:** November 2026 **Expiry Date:** November 2027	**Date Approved:** November 2024

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 2.1(Amended March 2025)

Revision History:

NoS PGD that has been superseded	NoS/PGD/Radio_Meds/MGPG1453, Version 2.0	
Date of change	**Summary of Changes**	**Section heading**
April 2023	References Updated.	References
June 2023	Chlorphenamine monograph added – removed prior to approval.	Monographs
June 2023	BNF Statements amended to reflect practice.	Monographs
October 2024	Moviprep monograph added, Kleanprep removed as discontinued. Monographs updated	Monographs
November 2024	Hyoscine information updated Reference hyoscine precautions added	Monographs, interactions & cautions References
March 2025	Tayside requested to be added to the PGD	Thoughout

NoS Identifier: NoS/PGD/Radiographers_MF/1453
Keyword(s): PGD Patient Group Direction Radiographer medicines carbex Sodium Bicarbonate Simethicone Citric Acid Glyceryl Trinitrate GTN Hyoscine Butylbromide Buscopan Moviprep Lactulose Duphalac Metoclopramide Hydrochloride Metoprolol Tartrate Betaloc Chlorphenamine

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 (updated October 2024)
	Completed:	November 2024
	Approved:	November 2024 (published November 2024)
	Amended and re-authorised:	March 2025

Organisational Authorisations

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

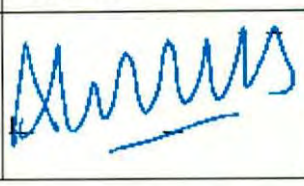
PGD Developed/Reviewed by;

Medical practitioner	**Name:** Dr Dympna McAteer **Health Board:** NHSG **Title:** Consultant Radiologist **Contact email:** dympna.mcateer@nhs.scot **Signature:** ..... **Date:** 22/11/2024
Senior representative of the professional group who will provide care under the direction	**Name:** Laura Farquharson **Health Board:** NHSG **Title:** Superintendent Radiographer **Contact email:** laura.farquharson@nhs.scot **Signature:** ..... **Date:** 21/11/2024
Lead author	**Name:** Lorna Main **Health Board:** NHSG **Title :** Superintendent Radiographer **Contact email:** lorna.main2@nhs.scot **Signature:** ..... **Date:** 20/11/2024
Pharmacist	**Name:** Russell Mackay **Health Board:** NHSO **Title :** Clinical Pharmacist **Contact email:** Russell.mackay@nhs.scot **Signature:** ..... **Date:** 22/11/2024

Approved for use within NoS Boards by;

North of Scotland (NoS) PGD Group Chair	Signature	Date Signed
Lesley Coyle		25/03/2025

Authorised and executively signed for use within NoS Boards by;

NHS Grampian Chief Executive	Signature	Date Signed
Adam Coldwells – Interim Chief Executive		25/03/2025

Management and Monitoring of Patient Group Direction

PGD Consultative Group

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

Name:	**Title:**
Lorna Main	**Lead Author:** Superintendent Radiographer NHSG
Russell Mackay	**Pharmacist:** Clinical Pharmacist NHSO
Dympna McAteer	**Medical Practitioner:** Consultant Radiologist NHSG
Laura Farquharson	**Senior Representative:** Superintendent Radiographer NHSG
Lauren Gault	Superintendent Radiographer NHSG
Lokesh Saraswat	Consultant Radiologist NHSG
Kate Smith	Radiology Service Manager NHSO
Medicines Information NHS Grampian	

Patient Group Direction For The Administration Of Medicines Included In The Radiographers 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 PGD Formulary (Appendix 3) to individuals from 2 years of age and over. **Note:** Prior to the examination, all individuals will be asked a series of questions from the specialised Patient Identification Protocol or equivalent in all Boards. Within NHSG the checklist will be scanned into the Radiology Information System (RIS) as a record following the procedures outlined in this PGD. This PGD should be used in conjunction with the individual Board protocols and 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. • Individual must have completed a pre-examination checklist relevant to the imaging procedure being undertaken. **Note:** See individual medicine monographs for specific age inclusion criteria and specific inclusions. Prior to the administration of the medicine, valid consent to receiving treatment under this PGD must be obtained. Consent must be in line with current individual NHS Boards consent policy.
Exclusion criteria	• Individuals aged less than 2 years of age • Individuals for whom no valid consent has been received. **Note:** See individual medicine monographs for specific exclusions including age restrictions.
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 and warnings listed in the individual monographs should be taken into account. • The Medicine Patient Information Leaflet (PIL) should be consulted to ensure that the individual has not experienced a previous hypersensitivity reaction to any ingredients or excipients.
Action if excluded from treatment	Medical advice must be sought – refer to relevant medical practitioner. 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/person 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?	See individual medicine monographs.
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	N/A
Follow-up (if applicable)	Individuals should not leave if they are feeling unwell without speaking to the healthcare professional who administered the medicine first. If necessary should be contacted for advice.
Advice (Verbal)	• Advise individual/person what to expect and of the possible side effects and their management. • If serious adverse or persistent effects occur, the individual/parent/carer should be advised to 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/person. 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 severe reactions in the radiology/radiotherapy departments. If required, the crash or resuscitation team should be called immediately as per departments' pathway. 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 supplied/administered: • Appropriate storage facilities or pharmaceutical refrigerator • An acceptable level of privacy to respect individual's 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/person 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/person • 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

	• Aware when a medication is being used off-label and be able to explain this term to the individual receiving the medication.
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 individual 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. If any training needs are identified these 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 working within NHS Grampian, Highland, Orkney, Shetland Tayside and Western Isles can be authorised to administer the medicine(s) by their Unit Clinical Director or Consultant Radiologist. 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. 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 • Individuals 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 anatomical site where appropriate for injectable medicines) of the medicine(s) administered • 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, and who undertook the assessment of the individual's clinical suitability for the administration of the medicine • Record of any adverse effects and the actions taken (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: • Secondary Care Medical Notes • Individual radiology specific systems • HEPMA All records should be clear, legible and contemporaneous and in an easily retrievable format. **Note**: Prior to the examination, all individuals will be asked a series of questions from the specialised Patient Identification Protocol or equivalent in all Boards. Within NHSG the checklist will be scanned into the Radiology Information System (RIS) as a record following the procedures outlined in this PGD.

<table>
<tr><td>Audit</td><td>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 supplied/administered under a PGD.</td></tr>
<tr><td>References</td><td>British National Formulary and British National Formulary for Children British National Formulary (BNF) accessed 10/10/2024

Electronic Medicines Compendium
http://www.medicines.org.uk

<table>
<tr><th>Medicine</th><th>Date of Revision</th><th>Date Accessed</th></tr>
<tr><td>Betaloc® I.V. Injection</td><td>16/04/24</td><td>10/10/24</td></tr>
<tr><td>Carbex® Granules and Solution</td><td>17/02/23</td><td>10/10/24</td></tr>
<tr><td>Glyceryl Trinitrate 500microgram Tablets (Accord Brand)</td><td>20/09/22</td><td>10/10/24</td></tr>
<tr><td>Hyoscine Butyl Bromide Buscopan® 20mg/mL Solution for Injection</td><td>01/11/21</td><td>10/10/24</td></tr>
<tr><td>Duphalac® 3.335g/5 mL Oral Solution</td><td>13/06/22</td><td>10/10/24</td></tr>
<tr><td>Metoclopramide Hydrochloride 5mg/5mL oral Solution (Rosemount Brand)</td><td>09/05/24</td><td>10/10/24</td></tr>
<tr><td>Moviprep® Powder for oral solution</td><td>14/08/24</td><td>03/10/24</td></tr>
</table>

Medicines Information hyoscine information 19/11/24 (on file) ‘Precautions to be taken by radiologists and radiographers when prescribing hyoscine-N-butylbromide’; Clinical Radiology (2008) 63, 739-743 (doi:10.1016/j.crad.2008.02.008)</td></tr>
</table>

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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: _____

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.
Patient Group Direction For The Administration Of Medicines Included In The Radiographers PGD Formulary By Radiographers Working Within NHS Grampian, Highland, Orkney, Shetland, Tayside And Western Isles, Version 2.1
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

Patient Group Direction For The Administration Of Medicines Included In The Radiographers PGD Formulary By Radiographers Working Within NHS Grampian, Highland, Orkney, Shetland, Tayside And Western Isles, Version 2.1					
Name of Healthcare Professional	**Signature**	**Date**	**Name of Manager**	**Signature**	**Date**

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

Appendix 3 - Medicine Monographs

Medicine **Page**

Carbex® Sachet (Sodium Bicarbonate 1.26g, Simethicone 0.042g Granules and Citric Acid 1g/10mL Solution) (Administer)	
Indication	Gas producing agent for double contrast radiography of the gastrointestinal tract.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • All individuals aged 12 years old and over.
Exclusion Criteria	As per PGD, general exclusions as there are no other specific exclusions for the use of Carbex®. • Aged under 12 years.
Precautions and Special Warnings	As per PGD, general precautions as there are no specific precautions for the use of Carbex®. There are no known effects of Carbex® on pregnancy or lactation.
Legal Status	Carbex® is a Prescription (P) Medicine.
Dose/Maximum total dose	The contents of one sachet (2.8g) of Carbex® granules should be consumed along with the included 10mL Carbex® solution. **Maximum dose of one 2.8g sachet, with 10ml solution, 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 Open one sachet of Carbex® granules. Have the individual place the granules on their tongue. Have the individual immediately swallow the complete contents of the Carbex® solution 10mL bottle. It is recommended that the barium should be swallowed thirty seconds later.
Quantity to be administered	One 2.8g sachet of Carbex® granules and included 10mL solution.

Carbex® Sachet (Sodium Bicarbonate 1.26g, Simethicone 0.042g Granules and Citric Acid 1g/10mL Solution) (Administer)	
Potential Adverse Reactions	No known effects.
Advice	No specific advice as regards the Carbex®, but as the individual will also be supplied with barium, advise them they can eat and drink as normal following the procedure. They should be advised to drink plenty of fluids and eat high-fibre foods for the first few days, to help stop the barium causing constipation.
Follow up (If applicable)	Individuals who have undergone barium meal or barium swallow 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 individuals should remain on the premises for at least 10–15 minutes. Individuals should not leave if they are feeling unwell without speaking to the radiographer or 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	Store in a dry place. Do not store above 25° C.

Glyceryl Trinitrate (GTN) 500microgram Tablets (Administer)	
Indication	To promote vasodilation and accuracy of CT coronary angiography.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • All individuals 16 years and over attending for a CT coronary angiogram.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Under 16 years of age • Have had a previous reaction to glyceryl trinitrate (GTN), other nitro compounds or any of the excipients. • Are taking phosphodiesterase type 5 inhibitors (e.g. sildenafil, vardenafil, tadalafil) • Have angina caused by hypertrophic obstructive cardiomyopathy as it may exaggerate outflow obstruction • Have closed angle glaucoma • Have marked anaemia • Have possible increased intracranial pressure (e.g. cerebral haemorrhage or head trauma) • Severe hypotension (systolic blood pressure below 90mm Hg) • Have rare hereditary problems of galactose intolerance, lap lactase deficiency or glucose-galactose malabsorption • Pregnancy • Breastfeeding. See SMPC and current BNF for full details of contraindications and interactions.
Precautions and Special Warnings	Caution is necessary in individuals with severe hepatic or renal impairment, hypothyroidism, hypoxaemia, hypothermia or a recent history of myocardial infarction and malnutrition. Glyceryl trinitrate should be used with caution in individuals in whom adequate preload is important for maintaining cardiac output (e.g. acute circulatory shock including hypovolemic shock or cardiogenic shock with inadequate diastolic filling pressures, severe mitral stenosis, pericardial tamponade, constrictive pericarditis, orthostatic dysfunction) because administration of a vasodilator in these individuals may worsen clinical status. GTN should be used with caution in individuals with cerebrovascular disease since symptoms may be precipitated by hypotension.

Glyceryl Trinitrate (GTN) 500microgram Tablets (Administer)	
	GTN may worsen hypoxaemia in individuals with lung disease or cor pulmonale. Arterial hypotension with bradycardia may occur in individuals with myocardial infarction; this is thought to be reflexly mediated.
Legal Status	GTN in tablet form is a Pharmacy (P) only medicine. **Note:** The use of GTN for this indication, and in under 18 years of age, is outside the terms of the marketing authorisation and constitutes an off-label use of GTN. As such, the individual must be informed prior to the administration that the use is off-label.
Dose/Maximum total dose	Single 500microgram dose. **Maximum dose allowed under this PGD is 500micrograms.**
Frequency of dose/Duration of treatment	Single dose for procedure indicated.
Maximum or minimum treatment period	See Frequency of dose/Duration of treatment section above.
Route/Method of Administration	GTN tablets must be placed under the tongue (administered sublingually) and retained in the mouth until dissolved.
Quantity to be administered	One 500microgram tablet.
Potential Adverse Reactions	GTN Tablets may cause the following side effects; **Common** Headaches Dizziness Drowsiness Tachycardia Hypotension Asthenia **Rare** Facial flushing Fainting Localised feeling of discomfort in the mouth or tongue, blistering or ulcers Nausea and vomiting
Advice	Advice should be given on what to expect and what to do for major and minor reactions.

Glyceryl Trinitrate (GTN) 500microgram Tablets (Administer)	
Follow up (If applicable)	If any complications arise during or immediately after the procedure then the opinion of a supervising radiologist should be sought. Advice should be given to seek urgent ophthalmological advice when individuals develop a painful, red eye after the administration of GTN. All adverse incidents will be documented in the radiology report and DATIX or equivalent report should be completed. Adverse incidents will also be reported back to supervising radiologist.
Storage	Store below 25°C in a dry place and protect from light. Add date when opening the packaging. Close the cap tightly after removing a tablet. Date bottle on opening. Discard unused tablets 8 weeks after opening, following Board medicines disposal guidance.

Hyoscine Butylbromide (Buscopan®) 20mg/mL Solution for Injection (Administer)	
Indication	Hyoscine butylbromide is used as a prophylactic anti-peristaltic agent in radiological procedures such as CT colonography, MR enterography and MR abdomen/pelvis, to reduce movement artefact and optimise image quality.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • All individuals aged 12 years or over attending for procedures performed by a radiographer, e.g. CT colonography, MR enterography and MR abdomen/pelvis.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Aged less than 12 years old • Individuals with any of the following; o Narrow angle glaucoma o Prostate enlargement/hypertrophy with urinary retention o Mechanical stenosis in the gastrointestinal tract o Paralytical or obstructive ileus o Myasthenia gravis o Tachycardia (Heart Rate >100bpm) o Megacolon o Acute porphyria • History of significant local or general allergic reaction to a previous administration of hyoscine butylbromide injection (Buscopan®), the active substance or any of the excipients • Should not be used during pregnancy or lactation. See SMPC and current BNF for full details of contraindications and interactions.
Precautions and Special Warnings	Hyoscine butylbromide injection (Buscopan®) ampoules can cause tachycardia, hypotension and anaphylaxis, therefore use with caution in individuals with cardiac conditions such as cardiac failure, coronary heart disease, cardiac arrhythmia or hypertension, and in cardiac surgery. Monitoring of these individuals is advised. Emergency equipment and personnel trained in its use must be readily available.

Hyoscine Butylbromide (Buscopan®) 20mg/mL Solution for Injection (Administer)	
	Individuals should be questioned, as per the pre-examination check list for any exclusions or issues. The MR or CT radiographer must discuss any concerns with the supervising radiologist before proceeding. **Note:** It is the individual radiographer's decision and responsibility as to whether or not such individuals be treated under the PGD should there be any concerns.
Legal Status	Hyoscine butylbromide injection (Buscopan®) is a Prescription-only Medicine (POM). **Note:** The use of Buscopan® in children aged 12-18 years old is outside the terms of the marketing authorisation and constitutes an off-label use of the medicine. The individual should be informed prior to the administration that the use is off-label.
Dose/Maximum total dose	20mg dose – administered by slow intravenous injection. The lowest dose that provides sufficient optimisation of image quality for diagnostic purposes. **Maximum total dose allowed under this PGD is 40mg during one examination.**
Frequency of dose/Duration of treatment	Intravenous antispasmodics have a relatively short duration of action therefore it is acceptable to give a further dose of 20mg after 10 minutes if there is insufficient reduction in peristalsis.
Maximum or minimum treatment period	See Frequency of dose/Duration of treatment section above.
Route/Method of Administration	Administer intravenously. Intravenous injection should be performed 'slowly' (in rare cases a marked drop in blood pressure and even shock may be produced by hyoscine butylbromide injection (Buscopan®)).
Quantity to be administered	Dependent on clinical requirement. **Maximum total dose allowed under this PGD is 40mg during one examination.**

Hyoscine Butylbromide (Buscopan®) 20mg/mL Solution for Injection (Administer)	
Potential Adverse Reactions	Hyoscine may cause antimuscarinic/anticholinergic side effects including blurred vision, dry mouth and constipation. The anticholinergic effect of drugs such as antidepressants, antihistamines, quinidine, amantadine, antipsychotics (e.g. phenothiazines, butyrophenones), disopyramide and other anticholinergics (e.g. tiotropium, ipratropium, atropine-like compounds) may be intensified by hyoscine. However as hyoscine is being used, as a single dose to a maximum of 40mg, for investigative procedure this is unlikely to be of clinical significance. The tachycardic effects of beta-adrenergic agents may be enhanced by hyoscine. Concomitant treatment with dopamine antagonists such as metoclopramide may result in diminution of the effects of both drugs on the gastrointestinal tract. Common side effects reported include but are not limited to; visual accommodation disturbances, tachycardia, dizziness and dry mouth. Hyoscine may cause an increase of intraocular pressure in patients with undiagnosed/untreated narrow angle glaucoma. Patients should be advised to seek urgent ophthalmological advice if they develop painful, red eye (one or both eyes), with loss of vision after the injection of hyoscine (see advice section).
Advice	Advice should be given on what to expect and what to do for major and minor reactions. Advice should be given to seek urgent ophthalmological/eye hospital advice when individuals develop a painful, red eye (one or both eyes) after the injection of hyoscine butylbromide injection (Buscopan®). Advice should be given to seek urgent medical advice if the individual fails to pass urine in the 24 hours following injection of hyoscine butylbromide injection (Buscopan®). Individuals should be advised to avoid consumption of alcohol for 24 hours.

Hyoscine Butylbromide (Buscopan®) 20mg/mL Solution for Injection (Administer)	
	If individuals experience transient blurred vision disturbances, dizziness or drowsiness then they should be advised not to drive or operate machinery until it subsides (normal vision usually resumes within 45minutes of injection). The episode is normally self-limiting.
Follow up (If applicable)	Recipients of hyoscine butylbromide 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 individuals should remain on the premises for at least 10 - 15 minutes. If any complications arise during or immediately after the procedure then the opinion of a supervising radiologist should be sought. All adverse incidents will be documented in the radiology report and DATIX or equivalent report should be completed. Adverse incidents will also be reported back to supervising radiologist.
Storage	Store below 30°C. Store in the outer carton. For single use only.

Lactulose 3.335g/5mL Oral Solution (Administer)	
Indication	For MRI Enterography.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals aged 2 years and over.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Under 2 years of age • Galactosaemia • Gastro-intestinal obstruction, perforation or risk of perforation. See SMPC and current BNF for full details of contraindications and interactions.
Precautions and Special Warnings	The defecation reflex may be altered during the treatment with lactulose.
Legal Status	Lactulose 3.335g/5mL Oral Solution is a Pharmacy (P) Medicine.
Dose/Maximum total dose	50mLs To be supplied with 1litre of water which is required to be consumed pre-scan. **Maximum total dose allowed under this PGD is 50mLs.**
Frequency of dose/Duration of treatment	Once only administration.
Maximum or minimum treatment period	See Frequency of dose/Duration of treatment section above.
Route/Method of Administration	Oral
Quantity to be administered	50mL

Lactulose 3.335g/5mL Oral Solution (Administer)	
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 (can be reduced by administration with water), vomiting, flatulence, cramps and abdominal discomfort.
Advice	Advice should be given on what to expect and what to do for major and minor reactions. Advise individual to consume in tandem with water if too sweet to consume in one administration. Advise individual that bowel movements may be softer following administration.
Follow up (If applicable)	If any complications arise during or immediately after the procedure then the opinion of a supervising radiologist should be sought. All adverse incidents will be documented in the radiology report and DATIX or equivalent report should be completed. Adverse incidents will also be reported back to supervising radiologist.
Storage	Do not store above 25°C. Do not refrigerate or freeze.

Metoclopramide Hydrochloride 5mg/5mL Oral Solution (Administer)	
Indication	To relax the pylorus and facilitate barium entering the small intestine during small bowel study examinations.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals aged 12 years and over.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Individuals aged less than 12 years of age • Individual with a history of gastro-intestinal obstruction, perforation or haemorrhage • Individual 3–4 days after gastro-intestinal surgery • Individual with phaeochromocytoma • Individual with hypersensitivity to metoclopramide hydrochloride or any of the excipients • Methaemoglobinaemia • NADH cytochrome-b5 deficiency • Individual who do not have a pylorus, e.g. gastrectomy, , gastric bypass • Parkinson's disease or history of neuroleptic or metoclopramide-induced tardive dyskinesia • Epilepsy • Individual who are hypersensitive to procaine or procainamide • Breastfeeding. See SMPC and current BNF for full details of contraindications and interactions.
Precautions and Special Warnings	Metoclopramide Hydrochloride should be used with caution in the following individuals: • Frail and/or elderly as there is an increased risk of side effects • In individuals aged 12 – 19 years old as there is an increased risk of extrapyramidal effects • Atopic allergy (including asthma).
Legal Status	Metoclopramide Hydrochloride 5mg/5mLOral Solution is a Prescription only Medicine (POM).
Dose/Maximum total dose	Individuals aged 18 years and over - Single dose of 10mg (10mL). Individuals aged 12 - 18 years of age – Single dose of 5mg (5mL).

Metoclopramide Hydrochloride 5mg/5mL Oral Solution (Administer)	
	Maximum dose of 10mg (10mL) 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 For individuals aged 18 years and over 10mg (10mL) of metoclopramide hydrochloride 5mg/5mL oral solution is provided to the individual for self-administration prior to the ingestion of E-Z-Paque® solution. For individuals aged 12 – 18 years 5mg (5mL) of metoclopramide hydrochloride 5mg/5mL oral solution is provided to the individual for self-administration prior to the ingestion of E-Z-Paque® solution.
Quantity to be administered	Individuals 18 years of age and over - One 10mg (10mL) dose only. Individuals 12 – 18 years of age – One 5mg (5mL) dose only.
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: • Diarrhoea • Asthenia • Somnolence • Extrapyramidal disorders, e.g. oculogyric crisis • Depression • Restlessness. Concomitant treatment with hyoscine may result in diminution of the effects of both drugs on the gastrointestinal tract.

Metoclopramide Hydrochloride 5mg/5mL Oral Solution (Administer)	
Advice	Metoclopramide may cause drowsiness, dizziness, dyskinesia and dystonias which can affect the vision and also interfere with the ability to drive and operate machinery.
Follow up (If applicable)	Individual who have undergone small bowel study 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 the 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 radiographer or 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	Store below 25°C and keep in the original outer carton.

Metoprolol Tartrate (Betaloc) 5mg/5mL Solution for Injection (Administer)	
Indication	Administered to lower heart rate before a CT Coronary Angiogram (CTCA). This reduces ectopic activity and heart rate variability resulting in better quality diagnostic images.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals 16 years of age and over who require a CTCA to show the anatomy of the coronary arteries who have a heart rate greater than 65 beats per minute.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Individuals under 16 years of age • They have a known allergy or hypersensitivity to other beta-blocker medicines (such as atenolol or propranolol) • They have poorly controlled asthma or are currently wheezy • They have or have had any of the following heart problems: o Suspected current heart attack o Suspected current cardiogenic shock o Heart failure which is not under control o Second or third-degree heart block o Bradycardia (<50bpm) • They are hypotensive (BP <110/60mmHg) • Severe aortic stenosis • Congenital heart disease (discuss with cardiologist) • Decompensated cardiac failure (pulmonary oedema, hypoperfusion or hypotension) • Sick sinus syndrome (unless a permanent pacemaker is in place) • Severe peripheral arterial circulatory disease • They have untreated phaeochromocytoma • They have metabolic acidosis • They are currently taking verapamil or diltiazem • They are pregnant. See SMPC and current BNF for full details of contraindications and interactions.
Precautions and Special Warnings	Care should be taken if the individual currently has or may have had previously any of the conditions listed below. However, it should be noted that these conditions do not exclude individual from receiving metoprolol tartrate: • Prinzmetal's angina • Poor blood circulation

Metoprolol Tartrate (Betaloc) 5mg/5mL Solution for Injection (Administer)	
	• Controlled heart failure • First-degree heart block • Severe liver dysfunction • Psoriasis • Although contra-indicated in severe peripheral arterial circulatory disorder, care should be taken with less severe peripheral arterial circulatory disorders • Currently taking ivabradine • Administration of metoprolol tartrate may increase both the sensitivity towards allergens and the severity of anaphylactic reactions. Radiographers should exercise their professional judgement with regard to administering metoprolol tartrate. If there is any doubt as to the individual's suitability they should be discussed with radiologist.
Legal Status	Metoprolol Tartrate (Betaloc) 5mg/5mLis a Prescription-only Medicine (POM). **Note:** Administration for this indication constitutes an off-label use of metoprolol tartrate. However the administration of intravenous metoprolol tartrate is a recognised practice in CTCA as its use allows a reduction in effective radiation dose, significantly reduces scanning time, is safe, well tolerated and maintains diagnostic quality. The individual should be informed prior to the administration that the use is off-label.
Dose/Maximum total dose	The dose of metoprolol tartrate should be adjusted to the individual requirements of the individual. Starting dose of 5mg intravenously over one minute followed by sodium chloride 0.9% (saline flush), with re-administration of the same dose every 2-3 minutes until the heart rate is below 65bpm, or until maximum dose of 20mg has been administered. **Maximum dose allowed under this PGD is 20mg.**
Frequency of dose/Duration of treatment	See Dose/Maximum total dose section above.

Metoprolol Tartrate (Betaloc) 5mg/5mL Solution for Injection (Administer)	
Maximum or minimum treatment period	See Dose/Maximum total dose section above.
Route/Method of Administration	Metoprolol tartrate is administered intravenously.
Quantity to be administered	Dependent on clinical requirement, see Dose/Maximum total dose section above.
Potential Adverse Reactions	Care should be taken if the individual is currently prescribed, or has recently taken any other medications**. Under this PGD, the cardiologist and radiologist will have pre-prescribed the metoprolol tartrate and will have given consideration to all current and recent medications.** The radiographer has a duty of care under this PGD to check which medications the individual is on and list them in the CTCA checklist. However, it should be noted that most medications (with the exception of those named in the exclusion criteria) do not exclude individual from receiving metoprolol tartrate. Radiographers should exercise their professional judgement with regard to administering metoprolol tartrate. If there is any doubt as to the individual's suitability they should be discussed with radiologist. Metoprolol tartrate may cause the following side effects: **Common** Slow pulse rate Pounding heart beat Dizziness (especially on standing) Abdominal Pain Headache Nausea Shortness of breath on exertion Diarrhoea
Advice	Advice should be given on what to expect and what to do for major and minor reactions.
Follow up (If applicable)	Blood pressure and heart rate monitored post examination (Individual should remain in the department for 30 minutes) and prior to them leaving the department.

Metoprolol Tartrate (Betaloc) 5mg/5mL Solution for Injection (Administer)	
	If any complications arise during or immediately after the procedure then the opinion of a supervising radiologist should be sought. All adverse incidents will be documented in the radiology report and DATIX or equivalent report should be completed. Adverse incidents will also be reported back to supervising radiologist.
Storage	Store below 25ºC in a dry place and protect from light. The medicine should be used immediately after opening

Moviprep® Powder for Oral Solution Sachet A + Sachet B (Administer)	
Indication	For MRI Enterography.
Inclusion Criteria	As per main PGD inclusion criteria and additionally; • Individuals aged 18 years and over.
Exclusion Criteria	As per main PGD exclusion criteria and additionally: • Individuals aged under 18 years • Gastrointestinal obstruction, perforation or ileus • Gastroparesis • Acute colitis and toxic megacolon • Known cardiac disease • Moderate to severe renal disease • Individuals who are pregnant or currently breast feeding • Phenylketonuria due to aspartame contents • Glucose-6-phosphate dehydrogenase deficiency, due to presence of ascorbate • Hypersensitivity to the active substance or to any of the excipients See SMPC and current BNF for full details of contraindications and interactions.
Precautions and Special Warnings	Caution should be used in individuals with an impaired gag reflex, reflux oesophagitis, or diminished levels of consciousness.
Legal Status	Moviprep® Sachets are a Pharmacy (P) Medicine.
Dose/Maximum total dose	Sachet A + Sachet B (11g) dissolved together to 1litre of water taken prior to the procedure. **Sachet A (112g) contains:** Macrogol 3350 100g Sodium sulfate anhydrous 7.500g Sodium chloride 2.691g Potassium chloride 1.015g **Sachet B (11g) contains:** Ascorbic acid 4.700g Sodium ascorbate 5.900g **Maximum total dose allowed under this PGD is one treatment (sachet A + sachet B) during one examination.**

Moviprep® Powder for Oral Solution Sachet A + Sachet B (Administer)	
Frequency of dose/Duration of treatment	Once only administration.
Maximum or minimum treatment period	See Frequency of dose/Duration of treatment section above.
Route/Method of Administration	Oral Reconstitution of Moviprep in water may take up to 5 minutes and is best performed by adding the powder to the mixing vessel first followed by the water. The patient should wait until all the powder has dissolved before drinking the solution. After reconstitution in water Moviprep consumption may begin immediately or if preferred it may be cooled before use.
Quantity to be administered	Sachet A + Sachet B dissolved in water to 1litre over a period of an hour prior to the procedure. It is recommended another litre of clear fluid is taken during the preparation time.
Potential Adverse Reactions	Oral medication taken within one hour of administration of Moviprep® may be flushed from the gastro-intestinal tract and not absorbed. Nausea, vomiting, bloating, abdominal pain and anal irritation commonly occur in individuals undergoing bowel preparation. Dehydration may occur as a result of diarrhoea and/or vomiting. As with other macrogol containing products, allergic reactions including rash, urticaria, pruritus, dyspnoea, angioedema and anaphylaxis are a possibility.
Advice	Advice should be given on what to expect and what to do for major and minor reactions. Advise individual that there may be a continued laxative effect post scan. Individual 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.

Moviprep® Powder for Oral Solution Sachet A + Sachet B (Administer)	
Follow up (If applicable)	Individuals should be assessed prior to being discharged from the department for any adverse effects from the administered medicine. Advise of the possible adverse effects and where to seek advice in the event of a suspected adverse reaction developing. If any complications arise during or immediately after the procedure then the opinion of a supervising radiologist should be sought. All adverse incidents will be documented in the radiology report and DATIX or equivalent report should be completed. Adverse incidents will also be reported back to supervising radiologist.
Storage	Store at room temperature.