

Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary
Contents

1. Gastro-intestinal system

Antacids

Antispasmodics

Motility stimulants

Ulcer healing drugs

- H₂ antagonists
- Proton pump inhibitors

Antidiarrhoeals

Chronic Bowel Disorders

Laxatives

- Bulk forming
- Stimulant
- Faecal softeners
- Opioid Receptor Antagonist
- Osmotic laxatives
- Bowel cleansing solutions
- Laxative policy
- Management of impacted faeces

Haemorrhoid preparations

Intestinal secretions

2. Cardiovascular System

Positive inotropes

Diuretics

- Thiazides
- Loop diuretics
- Potassium sparing diuretics
- Combination diuretics
- Osmotic diuretics

Anti-arrhythmics

Beta-blockers

Drugs affecting the renin-angiotensin system and other antihypertensives

- Vasodilator antihypertensives
- Centrally acting antihypertensives
- Alpha-blockers
- ACE inhibitors
- Angiotensin II receptor antagonists
- Sacubitril/Valsartan tablets (Entresto®)

Nitrates

Calcium channel blockers

Ivabradine

Potassium channel activators

Sympathomimetics

Anticoagulants

Antiplatelet drugs

- Clopidogrel prescribing guidelines

Fibrinolytic drugs

Antifibrinolytic drugs

Lipid lowering drugs

- Anion-exchange resins
- Fibrates

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

- [Statins](#)
- [Guidelines for prescribing cholesterol lowering agents](#)
- [Fish oils](#)
- PCSK 9 inhibitors
- [Cholesterol Absorption Inhibitors](#)
- [Other agents](#)

3. Respiratory System

Bronchodilators

- [Selective Beta2 agonist](#)
- [Antimuscarinics \(anticholinergics\) and LAMA/LABAa](#)
- [Theophylline](#)
- [Combination bronchodilators](#)
- [Inhaler devices](#)

Inhaled Corticosteroids

Leukotriene receptor antagonists

Management of acute severe asthma in adults

Management of COPD: pharmacological therapy of stable COPD and Hospital management of severe exacerbations of COPD

Solutions for nebulisation

Antihistamines

Respiratory stimulants

Oxygen

Mucolytics

Aromatic Inhalations

Cough preparations

4. Central Nervous System

Hypnotics and anxiolytics

Drugs used in psychoses

Antidepressant drugs

Nausea and vertigo

- [Algorithm for the management of post-operative nausea and vomiting](#)

Analgesics

- [Pain Ladder](#) – ‘Please refer to before prescribing’.
- [Non-opioid analgesics](#)
- [Opioid analgesics](#)
- [Prophylaxis of migraine](#)

Antiepileptics

Parkinsonism and related disorders

- [Dopaminergics](#)
- [Antimuscarinics](#)
- [Relief of intractable hiccup](#)

Drugs used in substance dependence

Management of alcohol withdrawal

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

5. Infections - Refer to Antimicrobial Policy

6. Endocrine system

Drugs used in diabetes

- Insulins
- Oral antidiabetic drugs

- Hypoglycaemia

Thyroid and antithyroid drugs

Corticosteroids

Pituitary hormones

Drugs affecting bone metabolism

7. Urinary tract disorders

Vaginal anti-infective drugs

Genito-urinary disorders

8. Malignant disease and immunosuppression

Cytotoxic drugs

Immunosuppressants

Sex hormones and hormone antagonists

9. Nutrition and blood

Anaemias

Fluids and electrolytes

Intravenous nutrition

Enteral nutrition

minerals

Vitamins

10. Musculoskeletal and joint diseases

Drugs used in rheumatic diseases and gout

- NSAIDS
- Corticosteroid injections
- Drugs used in gout

Neuromuscular disorders

- Drugs which enhance neuromuscular transmission
- Skeletal muscle relaxants
- Nocturnal leg cramps

Topical antirheumatics

11. Drugs acting on the eye

Anti-infective preparations

Corticosteroids

Mydriatics

Treatment of glaucoma

Miscellaneous

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

- [Tear deficiency](#)

12. Ear, nose and oropharynx

Drugs acting on the ear

- [Anti-inflammatory and anti-infective preparations](#)
- [Removal of ear wax](#)

Drugs acting on the nose

- [Nasal allergy](#)
- [Nasal staphylococci](#)

Drugs acting on the oropharynx

- [Ulceration and inflammation](#)
- [Fungal infections](#)
- [Oral hygiene](#)

- [Dry mouth](#)

13. Skin

Emollient and barrier preparations

Topical antipruritics

Topical corticosteroids

Sunscreens

Scalp preparations

Anti-infective skin preparations

- [Antibacterials](#)
- [Antifungals](#)
- [Antivirals](#)
- [Scabies and lice](#)

Disinfectants and cleansers

Wound management

14. Immunological products and vaccines

15. Anaesthesia

Intravenous anaesthesia

Inhalation anaesthesia

Antimuscarinics

Sedative and analgesic peri-operative drugs

- [Anxiolytics and neuroleptics](#)
- [Non-opioid analgesics](#)
- [Opioid analgesics](#)

Muscle relaxants

Anticholinesterases

Antagonists for central and respiratory depression

Malignant hyperthermia

Local anaesthetics

Appendix 8. Wound management – refer to [Wound formulary](#)

Liverpool Heart and Chest Hospital NHS Foundation Trust Drug Formulary

1. GASTRO-INTESTINAL SYSTEM

1.1 Antacids

Magnesium trisilicate mixture
Gaviscon

1.2 Antispasmodics

Mebeverine
Hyoscine butylbromide
Peppermint water

Motility stimulants

Metoclopramide (Maximum of 5 days treatment only as per [MHRA restrictions](#))
Domperidone ([Restricted to Cystic Fibrosis and Palliative Care use only](#))
Erythromycin (unlicensed indication. IV and oral)

1.3 Ulcer healing drugs

H₂ antagonists

Ranitidine

Proton pump inhibitors

Lansoprazole (see below for dosing and duration of therapy)

Indication	Dose of Lansoprazole	Duration of Therapy
Surgical prophylaxis	30mg daily (unlicensed indication)	4 weeks
NSAID GI prophylaxis	30mg daily (unlicensed indication) http://www.npc.nhs.uk/merec/pain/musculo/merec_extra_no30.php#GIR	Duration of NSAID therapy
Benign gastric ulcer	30mg daily	8 weeks
Duodenal ulcer	30mg daily for 4 weeks then 15mg maintenance therapy	Continuous (15mg daily)
GORD	30mg daily for 4 weeks, continued for	Continuous

**Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary**

	a further 4 weeks if not fully healed then maintenance dose of 15-30mg daily	
NSAID associated duodenal or gastric ulcer	As for GORD above	Continuous
Zollinger-Ellison syndrome	60mg daily adjusted according to response (up to 120 mg in divided doses).	Continuous
Eradication of <i>H Pylori</i>	Consult antimicrobial guidelines	1 week
Cough associated with GORD	15-30mg twice a day before meals (unlicensed dose) https://www.brit-thoracic.org.uk/document-library/clinical-information/cough/cough-guidelines/recommendations-for-the-management-of-cough-in-adults/	8 weeks and then review

Omeprazole (IV only) for use

- Where IV therapy is required at a dose of 40mg daily
- Prophylaxis of acid aspiration during general anaesthesia at a dose of 40mg on the evening before surgery then 40mg 2-6 hours before surgery.
- Dose should be converted to oral lansoprazole if therapy at earliest opportunity if treatment is to continue

Discharge prescriptions MUST state duration of therapy for Proton Pump inhibitors. Consideration should be given to the possible long term side effects of proton pump inhibitors including hypomagnesaemia<http://www.mhra.gov.uk/Safetyinformation/DrugSafetyUpdate/CON149774> and hip fracture risk <http://www.bmj.com/content/344/bmj.e372.pdf%2Bhtml>.

1.4 Antidiarrhoeals

Codeine Phosphate
Loperamide

1.5 Chronic bowel disorders

Consult gastroenterologist

1.6 Laxatives

Bulk forming
Fybogel

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Stimulant

Senna
Glycerine suppositories
Docusate sodium
Dantron (present in co-danthramer capsules and suspension) **Terminal care only.**

Faecal softeners

Arachis oil enema

Opioid Receptor Antagonist

Naloxegol 25mg/12.5mg tablet
NICE TA 345 <https://www.nice.org.uk/guidance/ta345>
PanMersey APC
<http://www.panmerseyapc.nhs.uk/recommendations/documents/PS144.pdf?UNLID=1071840152016721155836>

Osmotic laxatives

Lactulose
Gastrografin (CF use only – unlicensed)
Macrogol '3350' sachets
Sodium Citrate enema
Phosphate enema

Bowel cleansing solutions

Klean Prep
Picolax

5HT₄ Receptor Agonists

Prucalopride 2mg tablets – for use in chronic constipation in CF unresponsive to other treatments.
(For CF consultant use only). [NICE TA211 Chronic constipation in women](#)

Peripheral Opioid-receptor antagonist

Naloxegol 12.5mg and 25mg tablets. Indication: Opioid- induced constipation.
<https://www.nice.org.uk/guidance/TA345>
plus Pan Mersey hyperlink
<http://www.panmerseyapc.nhs.uk/recommendations/documents/PS144.pdf?UNLID=73470564420174615527>

Peripherally acting opioid receptor antagonist

Naldemedine 200 micrograms tablets
[Technology Appraisal Guidance \[TA651\]](#)
[Pan Mersey APC Statement: GREEN](#)

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Laxative Guidelines

Surgical Treatment/Prophylaxis in patients on opioids:

Senna 15mg at night

Lactulose 15ml bd initially and adjusted according to response

Consider changing lactulose to Macrogol '3350' One sachet bd where lactulose is ineffective or a more rapid response is required

Other points to consider

Consider increasing fluid intake and mobility and reviewing other potentially constipating medication (e.g. NSAIDs) in all cases where possible.

All laxatives are contraindicated in bowel obstruction.

Lactulose may take up to 48 hours to have an effect and is therefore not suitable for 'prn' administration or short term use.

Distal Intestinal Obstruction Syndrome in CF

(See policy - Nursing a patient with DIOS in CF)

- Initially give oral Gastrografin 100ml prn up to 500ml (unlicensed) with adequate fluid intake (1 litre of fluid is recommended per 100ml dose)
- If this fails to resolve blockage then commence Klean-Prep - one sachet in 1 litre of water every hour orally or via naso-gastric/PEG tube until blockage has resolved (unlicensed) plus Metoclopramide IV 10mg tds. Consider IV paracetamol 1g qds for pain relief (avoid opioid analgesia)

1.7 Haemorrhoid preparations

Anusol (suppositories or cream)

1.9 Intestinal secretions

Ursodeoxycholic acid

Creon

Pancrease

Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary

CARDIOVASCULAR SYSTEM

2.1 Positive inotropes

Adrenaline
Dobutamine
Dopamine
Dopexamine (Consultant anaesthetists only)
Isoprenaline (unlicensed use)
Milrinone
Eplerenone
Noradrenaline
Phenylephrine

2.2 Diuretics

Thiazides

Indapamide
Chlortalidone
Bendroflumethiazide
Metolazone

A licensed brand, Xaqua is now available but has different bioavailability to unlicensed version. Please prescribe by brand name and exercise caution when switching between brands. For more detailed guidance see:

[Full MHRA Advice](#)

[SPS Information](#)

[Joint UKCPA / BSH Information](#) .

Loop diuretics

Furosemide
Bumetanide

Potassium sparing diuretics

Amiloride

Aldosterone antagonists/Mineralocorticoid receptor antagonists (MRA)

Spironolactone

Eplerenone:

Patients intolerant of spironolactone in heart failure NYHA II and LVEF less than 30% or Heart failure post MI with LVEF less than 40%

Combination diuretics

Co-amilofruse

Osmotic diuretics

Mannitol

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Sodium glucose linked transporter (SGLT2) inhibitors (heart failure)

Dapagliflozin

[NICE TA679](#)

[Pan Mersey statement and prescribing support documents](#)

Empagliflozin

[NICE TA773](#)

[Pan Mersey statement and prescribing support documents](#)

2.3 Anti-arrhythmics

Adenosine

Amiodarone

Disopyramide

Flecainide

Lidocaine

Mexiletine

Propafenone

Quinidine (unlicensed use)

Verapamil

Digoxin
Dronedarone ([Dronedarone for the treatment of non-permanent atrial fibrillation NICE TA197](#))

2.4 Beta blockers

Indication	Preferred drug	Other options
Secondary prevention after myocardial infarction	bisoprolol	propranolol, metoprolol
Angina	bisoprolol	atenolol, metoprolol, propranolol
Hypertension (uncomplicated)	Not indicated for first line use. In combination therapy: atenolol, bisoprolol, propranolol. For intravenous treatment after aortic dissection use labetalol	
Heart failure	bisoprolol	carvedilol, metoprolol, nebivolol
Treatment of SVT	metoprolol	esmolol
Prophylaxis of SVT	metoprolol	propranolol, bisoprolol (unlicensed indication), atenolol, sotalol (seek consultant advice)
Life-threatening arrhythmias/ Recurrent ICD shocks	Bisoprolol (unlicensed indication)	Esmolol (unlicensed indication)

Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary

Prophylaxis of AF post CABG	bisoprolol	
Treatment of AF post CABG	Amiodarone 1 st line (this should be reviewed at OPD and if patient still in AF consider alternative treatment options due to adverse side effect profile) Sotalol 80mg BD	
Treatment of Long QT Syndrome (unlicensed indication) / CPVT	Nadolol 40mg and 80mg tablets	

See also [Cheshire and Merseyside Heart Failure Pathway](#)

2.5 Drugs affecting the renin-angiotensin system and other antihypertensives

Vasodilator antihypertensives

Sodium nitroprusside
Hydralazine
Diazoxide

Sildenafil

Patients with pulmonary arterial hypertension should normally be referred to the regional specialist centre (Sheffield). Any intention to treat a patient locally should be discussed with the chief pharmacist/cardiology pharmacist.

Centrally acting antihypertensives

Methyldopa
Moxonidine

Alpha blockers

Doxazosin (not MR)
Phentolamine
Phenoxybenzamine

Angiotensin Converting Enzyme (ACE) inhibitors

Ramipril
Perindopril

Angiotensin II receptor antagonists

Indication	Preferred Drug	Other Drugs
Hypertension	Candesartan	Losartan
Left Ventricular dysfunction (when ACE-inhibitor not tolerated because of cough)	Candesartan	

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Sacubitril/Valsartan tablets (Entresto®)

[Pan Mersey APC Sacubitril/Valsartan Statement \(includes prescribing support documents\)](#)

[NICE TA 388](#)

2.6 Nitrates

Isosorbide mononitrate (10mg tabs, 20mg tabs, 60mg slow release preparations only)

Glyceryl trinitrate (Buccal preparation is unlicensed)

2.7 Calcium channel blockers

Amlodipine

Diltiazem

Verapamil

2.8 Ivabradine.

Antianginal- for the treatment of stable angina pectoris for patients in sinus rhythm who have contraindication or intolerance of beta blockers

Heart failure ([NICE TA267](#))

2.9 Other anti-anginal drugs

Nicorandil

Ranolazine (consultant use only for the treatment of stable angina pectoris)

2.10 Anticoagulants (oral) – [See Anticoagulation Policy](#) and [EP anticoagulation policy](#)

Vitamin K antagonists

Warfarin

Acenocoumarol

Phenindione

Direct oral anticoagulants

It is for the prescribing clinician to determine which DOAC(s) are clinically appropriate for an individual patient based upon the relevant NICE technology appraisal guidance. For patients with atrial fibrillation, [NICE NG196](#) provides guidance on when to consider changing therapy.

For patients commencing treatment for AF: subject to the criteria specified in the relevant NICE technology appraisal guidance, clinicians should use edoxaban where this is clinically appropriate. If edoxaban is contraindicated or not clinically appropriate for the specific patient

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

then, subject to the criteria specified in the relevant NICE technology appraisal guidance, clinicians should then consider rivaroxaban first, then apixaban or dabigatran.

[Commissioning recommendations for national procurement for DOACs \(January 2022\)](#)

Dabigatran

Venous thromboembolism ([NICE TA 327](#))

Atrial fibrillation - [NICE TA249](#)

Idarucizumab - specific reversal agent for dabigatran when rapid reversal of its anticoagulant effects is required for emergency surgery/urgent procedures and in life-threatening or uncontrolled bleeding.

Rivaroxaban for the treatment and secondary prevention of deep vein thrombosis and/or pulmonary embolism - [NICE TA 287](#)

([Rivaroxaban for stroke prevention in atrial fibrillation NICE TA256](#))

([Rivaroxaban for preventing atherothrombotic events in people with coronary of peripheral artery disease NICE TA607](#))

([Rivaroxaban for treatment and prevention of venous thromboembolism NICE TA261](#))

([Rivaroxaban for preventing adverse outcomes after acute management of acute coronary syndrome NICE TAG335](#))

Apixaban

Treatment and secondary prevention of deep vein thrombosis and/or pulmonary embolism -[NICE TA 341](#)

Atrial fibrillation ([NICE TA275](#))

Edoxaban

Deep vein thrombosis and pulmonary embolism ([NICE TA354](#))

Atrial fibrillation ([NICE TA355](#))

Andexanet alfa for reversing anticoagulation from apixaban, rivaroxaban or edoxaban:

[NICE TA397](#)

[Pan Mersey](#)

2.11 Anticoagulants (parenteral) [See Anticoagulation Policy](#) and [EP anticoagulation policy](#)

Heparin (unfractionated)

Enoxaparin (Low Molecular Weight Heparin)

Danaparoid Sodium (in place of heparin where heparin induced thrombocytopenia suspected - refer to Trust HITT policy)

Bivalirudin For patients undergoing

primary PCI for ST-elevation Myocardial Infarction

([Bivalirudin for the treatment of Myocardial Infarction \(persistent ST-segment elevation\) NICE TA230](#))

Liverpool Heart and Chest Hospital NHS Foundation Trust Drug Formulary

Prasugrel for the treatment of acute coronary syndromes with percutaneous coronary intervention – [NICE TAG317 – include no diabetic patients, being addressed](#)

2.12 Antiplatelet drugs

Aspirin

Clopidogrel (see below)

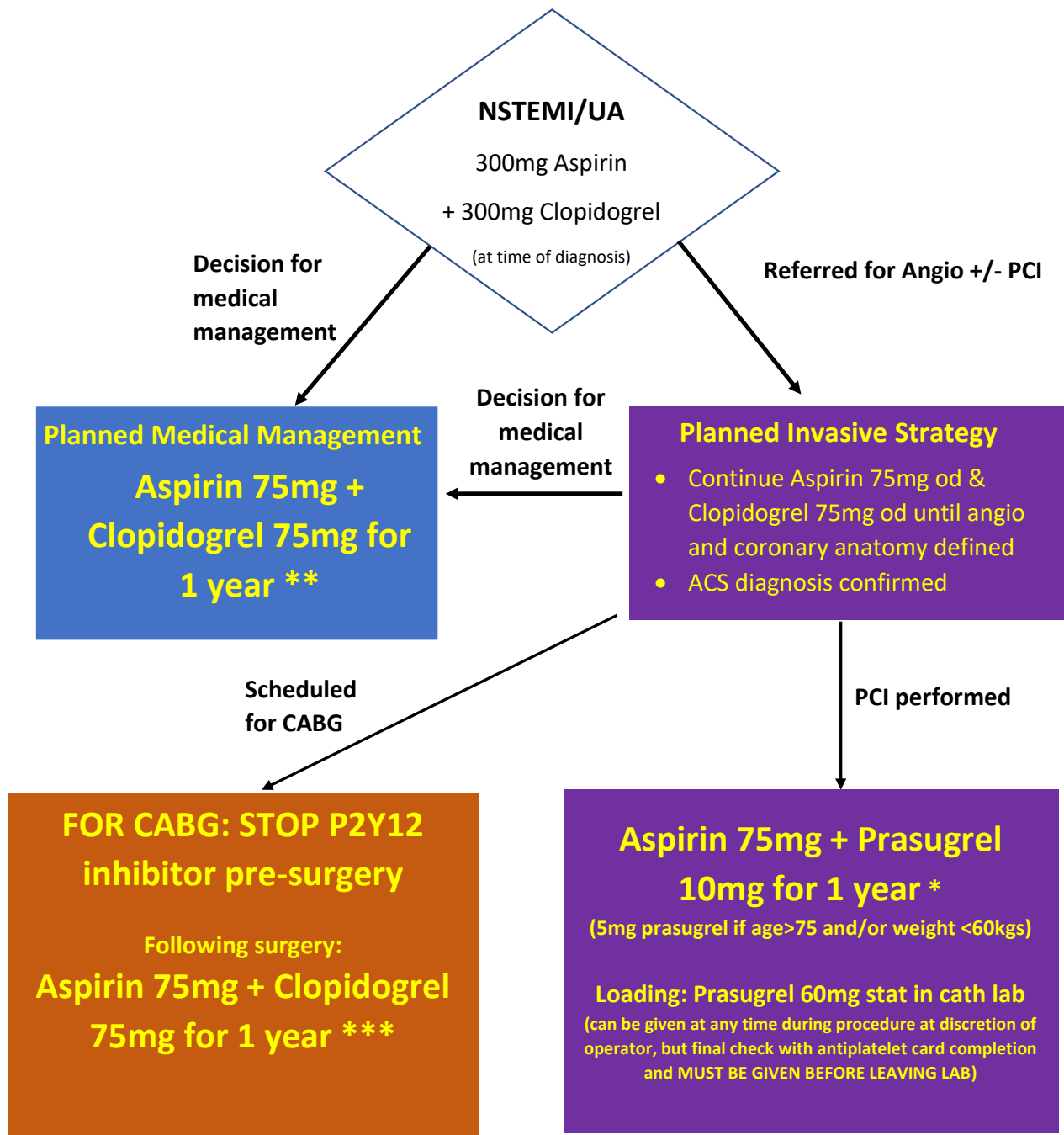
Prasugrel ([NICE TA317](#))

Ticagrelor ([NICE TA236](#))

See regional antiplatelet policy below:

Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary

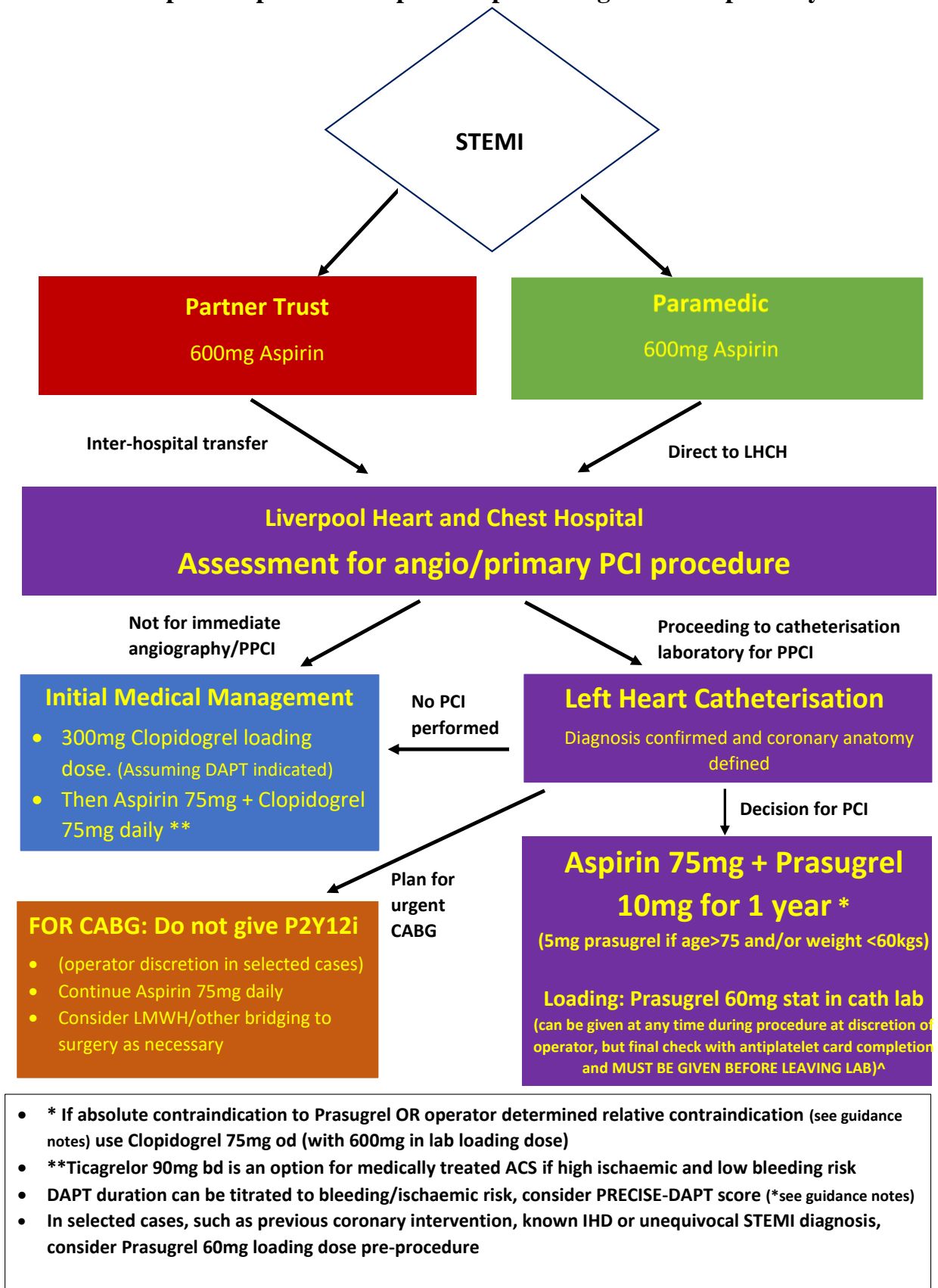
Antiplatelet protocol for patients presenting via ACS pathway



- Ideally stop p2y12 inhibitor at least 5 days pre-coronary artery bypass surgery (CABG)
- * If absolute contraindication to prasugrel OR operator determined relative contraindication (see guidance notes) use Clopidogrel 75mg od (with 600mg in lab loading dose)
- **Ticagrelor 90mg bd is an option for medically treated ACS if high ischaemic and low bleeding risk
- ***Prasugrel or Ticagrelor are options after CABG in selected cases (*see guidance notes)
- DAPT duration can be titrated to bleeding/ischaemic risk, consider PRECISE-DAPT score (*see guidance notes)

Liverpool Heart and Chest Hospital NHS Foundation Trust Drug Formulary

Antiplatelet protocol for patients presenting via PPCI pathway



Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

GUIDANCE NOTES ON ANTIPLATELET CHOICES

The following guidance is for patients with confirmed ACS considered appropriate for dual antiplatelet therapy (DAPT). All guidance is subject to clinical judgement and 'personalised' decisions on antiplatelet therapy, weighing up ischaemic and bleeding risk in an individual patient.

1. Choice of antiplatelet agent

- a. Patients for medical management of ACS only (i.e. no PCI or CABG)
 - i. First line therapy is Aspirin 75mg and Clopidogrel 75mg.
 - ii. Ticagrelor 90mg bd in addition to Aspirin 75mg may be considered as an option in cases where Clopidogrel is contraindicated or undesirable (e.g. genuine allergy or known non-responder).
 - iii. Prasugrel should not be used in patients being treated medically, with no knowledge of coronary anatomy, unless already established on this agent due to previous interventions.
 - iv. In genuine Aspirin allergy cases, Clopidogrel 75mg monotherapy should be used.
- b. Patients undergoing PCI (UA, NSTEMI or STEMI)
 - i. First line therapy is Aspirin 75mg and Prasugrel 10mg following PCI (reduce Prasugrel dose to 5mg if age >75 or weight <60kg). However, HBR (high bleeding risk) patients maybe more suitable for Clopidogrel or shortened DAPT.
 - ii. Prasugrel absolutely contraindicated in previous stroke/ TIA and use of Clopidogrel (or Ticagrelor) is advisable in these patients (see below for other contraindications/ cautions for use of Prasugrel)
 - iii. Second line is Aspirin 75mg and Clopidogrel 75mg.
 - iv. Aspirin 75mg and Ticagrelor 90mg bd as a third line option may be considered where both Clopidogrel and Prasugrel are contraindicated or undesirable.
 - v. In cases of genuine Aspirin allergy: Clopidogrel 75mg monotherapy should be considered first line. Ticagrelor 90mg bd monotherapy may be considered in individual cases on individual risk/benefit, although this is currently an off licence indication.
- c. Patients undergoing CABG
 - i. Generally, P2Y12i is stopped pre CABG (5-7 days) but decision should be made on individual case basis depending on clinical situation.
 - ii. After CABG the 1st choice of DAPT should be Aspirin and Clopidogrel for 1 year.
 - iii. Prasugrel or Ticagrelor (instead of Clopidogrel) can be considered in selected cases on risk benefit/balance after CABG (e.g. younger diabetic patients with low bleeding risk). Please note this is an off-licence indication for Prasugrel.
- d. Patients with concomitant or pre-existing AF (or other indication for long term anticoagulation)
 - i. Antiplatelet/antithrombotic strategies should be based on individualised assessments of thrombotic and bleeding risk. (Lip GY et al. Eur Heart J 2014;35:3155–3179).
 - ii. Ticagrelor and Prasugrel should not be used in combination with oral anticoagulants (i.e. NOACs or warfarin) or as part of "triple therapy".
 - iii. Comprehensive guidance on strategy choices in these patients is beyond the scope of this guidance document but generally patients who undergo revascularisation for ACS (and require concomitant anticoagulation) should receive either dual therapy (e.g. clopidogrel + OAC) from outset or a short period of triple therapy (aspirin + clopidogrel + OAC) for 1-3 months initially depending on ischaemic/bleeding risk balance. Patients who are medically managed should not be prescribed triple therapy.
- e. Patients who are ventilated or nil by mouth
 - i. It may not be possible to administer oral Aspirin, Prasugrel or Clopidogrel in a timely manner. Consider IV/PR Aspirin pre procedure. If PCI performed and oral route not available, consider dispersible Ticagrelor via NG tube as soon as possible.

Patients in whom Prasugrel generally desirable:

- STEMI presentation
- Stent thrombosis event
- Other ACS events occurring whilst taking Clopidogrel
- Diabetic
- Previous MI: particularly recurrent ischaemic events
- Multiple/complex stenting

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Tirofiban

2.13 Fibrinolytic drugs

Tenecteplase (TNK-tpa)

Administer over 5-10 seconds according to weight;

Weight (kg)	Dose (mL)
<60	6
60-69	7
70-79	8
80-89	9
90+	10

Co-therapy: IV heparin (minimum of 48hrs)

Weight <67 kg -4000 IU bolus then 800 IU/hr infusion (0.8ml/h of 1000 units/ml)

Weight > 67kg -5000 IU bolus then 1000 IU/hr infusion (1ml/h of 1000 units/ml)

Target APTT: 50-75s (1.5-2.5 times control)

Alteplase (usually reserved use for pulmonary embolism only unless tenecteplase is unable to be sourced)

Please note alteplase is recommended by NICE in acute ischaemic stroke ([NICE TA 264](#)). Alteplase is not approved for use for this indication at LHCH as all patients presenting with acute ischaemic stroke must be transferred to their local specialist centre for thrombolysis

2.14 Antifibrinolytic drugs

Aprotinin

Etamsylate

Tranexamic acid

2.15 Lipid lowering drugs

Anion-exchange resins

Colestyramine

Fibrates

Bezafibrate MR

Fenofibrate

Statins

Simvastatin

Atorvastatin

Liverpool Heart and Chest Hospital NHS Foundation Trust Drug Formulary

Rosuvastatin

PCSK 9 inhibitors

Alirocumab

[NICE TA 393Pan Mersey statement](#)

Evolocumab

[NICE TA 394Pan Mersey statement](#) (no longer recommended)

<http://www.panmerseyapc.nhs.uk/recommendations/documents/PS147.pdf?UNLID=734694823201746122456>

Cholesterol Absorption Inhibitors

Ezetimibe for treating primary heterozygous-familial and non-familial hypercholesterolaemia

<https://www.nice.org.uk/guidance/TA385>

PanMersey Ezetimibe hyperlinks

<http://www.panmerseyapc.nhs.uk/recommendations/documents/PS137.pdf?UNLID=734694823201746121252>

<http://www.panmerseyapc.nhs.uk/recommendations/documents/PS175.pdf?UNLID=734694823201746121252>

Other agents

Bempedoic acid with ezetimibe for treating primary hypercholesterolaemia or mixed dyslipidaemia

<https://www.nice.org.uk/guidance/ta694>

[Pan Mersey statement](#)

Inclisiran for treating primary hypercholesterolaemia or mixed dyslipidaemia

[NICE TA733](#)

[Pan Mersey statement](#)

3. RESPIRATORY SYSTEM

3.1 Bronchodilators

3.1.1 Selective beta2 agonists

Short acting beta2 agonists

Drug	Formulation	Strength	Usual dose Asthma	Usual dose COPD
Salbutamol	Generic CFC free MDI	100microgram	200 microgram	200 microgram qds and prn
	Ventolin Accuhaler	200microgram	prn	
	Salamol Easibreathe breath activated MDI	100microgram		

**Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary**

	Salbutamol easyhaler	200microgram		
	Salbutamol nebules	2.5mg, 5mg		2.5-5mg qds
	Salbutamol injection	500microgram /ml	2.5-5mg qds Consult chest physician	Consult chest physician
Terbutaline	Bricanyl turbohaler	500microgram	500microgram prn	500microgram qds and prn
	Bricanyl nebules	5mg	5-10mg qds	5-10mg qds
	Bricanyl injection	500 microgram/ml	Consult chest physician	Consult chest physician

Long acting beta2 agonists (see also combination steroid inhalers)

Drug	Formulation	Strength	Usual dose Asthma	Usual dose COPD
Salmeterol	Salmeterol CFC free MDI Serevent Accuhaler	25microgram 50microgram	50microgram bd (only in combination with steroid inhaler)	50microgram bd
Formeterol	Oxis Turbohaler	6mg, 12mg	12microgram bd (only in combination with steroid inhaler)	12microgram bd
Indacaterol	Onbrez Breezhaler	150microgram, 300microgram	Unlicensed	150-300 microgram od

Oral beta2 agonists

Drug	Formulation	Strength	Usual dose Asthma	Usual dose COPD
Bambuterol	Tablets	10mg	Consult chest physician	Consult chest physician

3.1.2 Antimuscarinics (anticholinergics) and LAMA/LABAs

Drug	Formulation	Strength	Usual dose Asthma	Usual dose COPD
Ipratropium	Atrovent MDI	20microgram	Not routinely used	20-40 microgram qds

Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary

	Ipratropium nebulas	250microgram, 500microgram	250-500 microgram qds	250-500 microgram qds
Tiotropium	Spiriva handihaler plus inhalant capsule	18microgram	Not licensed for treatment of asthma	18microgram od
	Braltus via Zonda Inhaler	10microgram	Not licensed for treatment of asthma	10microgram od
	Spiriva Respimat metered inhaler	2.5microgram	5microgram od	5microgram od
Aclidinium Bromide (Eklira Genuair®)	Dry powder inhaler	400microgram	Not licensed for treatment of asthma	400microgram inhaled TWICE daily. For maintenance treatment of chronic obstructive pulmonary disease.
Glycopyrronium Bromide (Seebri Breezhaler®)	Capsules for inhalation via Breezhaler inhaler device	50microgram	Not licensed for treatment of asthma	50microgram ONCE daily. Second line maintenance treatment of chronic obstructive pulmonary disease.
Umeclidinium (Incruse Ellipta®)	Dry powder inhaler	55microgram	Not licensed for treatment of asthma	55 microgram ONCE a day
Aclidinium with formoterol (Duaklir Genuair®)	Dry powder inhaler	Aclidinium 340 micrograms with formoterol 12 micrograms per inhalation	Not licensed for treatment of asthma	ONE inhalation TWICE a day
Glycopyrronium with indacaterol inhaler (Ultibro Breezhaler®)	Capsules for inhalation via Breezhaler inhaler device	Indacaterol 85 micrograms with glycopyrronium	Not licensed for treatment of asthma	Inhale the contents of ONE capsule ONCE a day

Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary

		43 micrograms per inhalation		
Umeclidinium bromide with vilanterol inhalation powder (Anoro Ellipta®)	Dry powder inhaler	Umeclidinium 55 micrograms with vilanterol 22 micrograms per inhalation	Not licensed for treatment of asthma	ONE inhalation ONCE a day
Tiotropium with Olodaterol (Spiolto Respimat®)	Inhalation solution	tiotropium 2.5micrograms with olodanterol 2.5micrograms per inhalation	Not licensed for treatment of asthma	TWO puffs (5 micrograms) once daily

3.1.3 Theophylline

Drug	Formulation	Strength	Usual dose Asthma	Usual dose COPD
Theophylline	Uniphyllin continus M/R tablets	200mg, 300mg, 400mg	200-400mg bd	200-400mg bd
Aminophylline (multiply by 0.8 for equivalent theophylline dose)	Injection for IV infusion	25mg/ml	See notes below	See notes below
	Phyllocontin tablets	225mg	225-450mg bd	225-450mg bd

Due to variation in rates of absorption, modified release preparations must be prescribed by brand.

Dose of Aminophylline intravenous infusion:

- Loading dose (only if not previously treated with oral theophylline):
 - 250-500mg (5mg/kg) over 20 minutes
- Maintenance dose (if on oral theophylline check levels first)
 - 0.5mg/kg/hr adjusted according to plasma concentration
- Higher doses may be used in Cystic Fibrosis

Therapeutic drug level monitoring of theophylline/aminophylline:-

- Therapeutic range: 10-20mg/l
- Time to steady state: Usually 24-48 hrs (unless loading dose given or previously on oral). Levels should not be taken before 48hours unless an IV loading dose has been given or previously on oral in which case 24hours is sufficient.

Oral theophylline levels (usual range 10-20mg/l) should be monitored 4 to 7 days after starting therapy. Levels should ideally be taken immediately before the next dose or at 4 hours post dose.

The theophylline dose should be reduced if macrolide or fluoroquinolone antibiotics (or other drugs known to interact) are prescribed for an exacerbation (contact pharmacy for advice)

Liverpool Heart and Chest Hospital NHS Foundation Trust Drug Formulary

3.1.5 Inhaler devices

Both Volumatic (for use with Clenil, Flixotide, Seretide, Serevent and salbutamol MDIs) and Space Chamber Plus (for use with all MDI inhalers) spacer devices are available from pharmacy to assist drug delivery. Patients should be advised to clean their spacer monthly with detergent and allow to air dry. Spacers should be replaced at least every 12 months.

Haleraids are available from pharmacy for patients who have impaired hand strength and are prescribed an MDI. These patients should initially be assessed by the respiratory specialist nurse to ensure that an MDI is the most appropriate device.

3.2 Inhaled Corticosteroids (prescribe by brand)

Drug	Formulation	Strength	Usual dose Asthma	Usual dose COPD
Beclometasone	Qvar CFC free MDI Qvar CFC free autohaler NB incompatible with spacer Qvar 50 microgram is equivalent to 100microgram Clenil CFC free MDI (non formulary)	50 microgram, 100microgram	100-400 microgram bd	Not normally used.
	Clenil Modulite (preferred choice in asthma)	50microgram 100microgram 200microgram 250microgram	400-800micrograms daily in 2-4 divided doses	Not normally used.
Budesonide	Pulmicort turbohaler	100micrograms 200micrograms 400micrograms	100-800 microgram bd	Not licensed in COPD
	Easyhaler	100micrograms 200micrograms 400micrograms		

Patients receiving high dose inhaled steroids (800microgram of beclometasone or equivalent) via a metered dose inhaler should also be prescribed an

Liverpool Heart and Chest Hospital NHS Foundation Trust Drug Formulary

appropriate spacer device (Volumatic/space chamber plus) to prevent oropharyngeal side effects. Consult the respiratory specialist nurse or pharmacy for advice on appropriate inhaler devices for individual patients.

Combination steroid plus long acting beta2 agonist inhalers (prescribe by brand)

Drug	Formulation	Strength	Usual dose Asthma	Usual dose COPD
Fluticasone plus salmeterol	Seretide CFC free evohaler (MDI)	50/25 microgram, 125/25 microgram,	2 puffs bd	Not licensed in COPD
	Seretide Accuhaler	100/50 microgram, 250/50 microgram, 500/50 microgram	One blister bd	500/50 (one blister) bd
Budesonide plus formeterol	Symbicort turbohaler	100/6, 200/6, 400/12	100/6 bd to 800/24 bd	200/6 – 400/12 bd
	Fobumix Easyhaler	80/4.5 160/4.5 320/9	80/4.5 – 320/9 2 puffs daily	80/4.5 not licenced. 160/4.5 2 puffs bd or 320/9 1 puff bd
Beclometasone dipropionate plus formeterol	Fostair MDI	100/6 200/6	1-2 puffs bd	2 puffs bd (100/6)
	Fostair NEXT DPI			
Fluticasone furoate* plus vilanterol	Relvar Ellipta	92/22 184/22	92/22 od 184/22 od	92/22 od

*Fluticasone furoate 100micrograms once daily is approximately equivalent to fluticasone propionate 250micrograms twice daily.

Combination steroid plus long acting beta2 agonist inhalers and long acting antimuscarinic (prescribe by brand)

Drug	Formulation	Strength	Usual dose Asthma	Usual dose COPD
Fluticasone	Trelegy DPI	92/55/22	Not	1 puff od

Liverpool Heart and Chest Hospital NHS Foundation Trust Drug Formulary

furoate/vilanterol/ umeclidinium			licensed in asthma	
Beclometasone dipropionate/formeterol fumarate/glycopyrronium	Trimbow MDI	100/6/10 (87/5/9)	Not licensed in asthma	2 puffs bd

Seretide 250/25 microgram evohaler has been removed from the hospital formulary as it is expensive and not licensed in COPD. Any new prescriptions for this will be queried by pharmacy and only supplied if there is no other device the patient can tolerate as determined by the respiratory specialist nurse.

3.3 Leukotriene Receptor Antagonists

Drug	Formulation	Strength	Usual dose Asthma	Usual dose COPD
Montelukast	tablets	10mg	10mg in the evening	Not licensed in COPD

MANAGEMENT OF ACUTE SEVERE ASTHMA IN ADULTS

Patients with acute severe asthma will not normally present at LHCH. If further guidance is required please refer to the BNF.

STEPWISE MANAGEMENT OF CHRONIC ASTHMA IN ADULTS

Refer to Pan Mersey Guidelines:

https://www.panmerseyapc.nhs.uk/media/2171/asthma_adult.pdf

*Prescribers should note the contents of [NICE TA138 Inhaled corticosteroids for the treatment of chronic asthma in adults and children over 12 years](#) before prescribing

Pharmacological therapy of stable COPD

Refer to Pan Mersey Guidelines:

<https://www.panmerseyapc.nhs.uk/media/2237/copd.pdf?UNLID=68399785720197415515>

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Smoking

All COPD patients still smoking should be referred to the Smoking Cessation Advisor for appropriate support and advice regarding quitting. Nicotine replacement therapies and varenicline are available for prescribing. [NICE TA123](#)

Nebulised bronchodilator therapy in stable COPD

Nebulised bronchodilator therapy should only be considered in patients with distressing or disabling breathlessness despite maximal inhaler therapy and should not be continued unless there is a perceived benefit. Assess individual and/or carer's ability to use the nebuliser before prescribing. Patients should be referred to the respiratory specialist nurses for further support. Patients commencing ipratropium nebuluses should have all anticholinergic inhaler therapy (eg tiotropium) stopped since there is no additional benefit.

Oral corticosteroids

Maintenance oral corticosteroid therapy is not normally recommended and should only be prescribed in advanced COPD in patients whose treatment cannot be stopped after an exacerbation. The dose should be kept as low as possible and osteoporosis prophylaxis therapy considered.

Theophylline

Only offer after trials of short- and long-acting bronchodilators or to patients who cannot use inhaled therapy (see section 3.1.3)

Mucolytics

Mucolytics (Carbocisteine) can be considered for patients with chronic productive cough. See below.

Roflumilast

Drug	Formulation	Strength	Usual dose Asthma	Usual dose COPD
Roflumilast	tablets	250micrograms 500micrograms	Not licensed in asthma	250micrograms once daily for 28 days then 500micrograms once a daily

*Prescribers should note the contents of [NICE TA461 –Roflumilast for treating chronic obstructive pulmonary disease](#) before prescribing

Hospital Management of Severe Exacerbations of COPD

Refer to <https://www.nice.org.uk/guidance/ng115/chapter/Recommendations>

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

SOLUTIONS FOR NEBULISATION

Patients with COPD and carbon dioxide retention ($\text{PaCO}_2 > 6.0\text{Kpa}$) should have their nebuliser therapy driven via an air cylinder or a nebuliser compressor. If the hypercapnic patient is so hypoxic that they need continuous oxygen then this should be administered via nasal cannula and the nebuliser driven from an air cylinder or compressor concurrently. Patients without CO_2 retention can use either air or oxygen safely (unless the patient has acute asthma in which case oxygen must be used) but oxygen as a driving gas should be discontinued immediately after medication is nebulised. (See nebulisation guidelines for further information on preparations and administration)

Patients not previously using nebulised therapy should only be discharged on such treatment on the advice of a respiratory physician or the Respiratory Nurse Specialist.

3.4 Antihistamines

Drug	Formulation	Strength	Dose
Chlorphenamine	Tablets Oral solution	4mg 2mg/5ml	4mg 4-6hourly. Max 24mg in 24 hours
Cetirizine	Tablets	10mg	10mg daily

3.5 Respiratory stimulants

Doxapram - Consult SPC for dosing details. For use on consultant recommendation only.

3.6 Oxygen

Refer to 'Oxygen Prescription and Administration in Adults Including Emergency Indications' Policy available on the intranet.

3.7 Mucolytics

Drug	Formulation	Strength	Dose
Dornase Alfa	Pulmozyme nebulisation solution	2.5mg	2.5mg daily (Cystic Fibrosis only)
Sodium Chloride	Nebules	3% or 7%	4mL up to twice daily
Mannitol	Inhalation powder, hard capsules	40mg	400mg twice daily (Cystic Fibrosis only) NICE TAG 266 Mannitol dry

Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary

Acetylcysteine (NACSYS) Prescribe by brand	Effervescent tablet	600mg	powder for inhalation for treating cystic fibrosis 600mg daily
Carbocisteine	Capsules Syrup	375mg 250mg/5ml	375-750mg tds
Erdosteine	Capsules	300mg	300mg TWICE daily for up to 10 days.

3.8 Cough preparations

Drug	Formulation	Strength	Dose
Simple Linctus	Linctus Sugar Free Linctus	125mg/ml	5ml up to QDS
Codeine	Oral solution	15mg/5ml	5-10ml 3-4 times a day

4. CENTRAL NERVOUS SYSTEM

4.1 Hypnotics and anxiolytics

Benzodiazepines and other hypnotics should not be routinely prescribed for anxiety or night sedation. If treatment is considered necessary then they should be prescribed on a 'prn' basis only and be reviewed regularly.

Owing to the possibility of addiction, patients not previously taking benzodiazepines prior to admission should not receive them on discharge.

Hypnotics

Zopiclone - licensed for short term use only. Follow advice as for benzodiazepines above

Temazepam (controlled drug)

Melatonin (short-term use only)

Anxiolytics

Diazepam

Lorazepam

Chlordiazepoxide (alcohol withdrawal – see below)

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

4.2 Drugs used in psychoses

Antipsychotic drugs

Haloperidol IV (delirium in Critical Care only)

Quetiapine (delirium only)

Risperidone (delirium in Critical Care only)

For all other indications consult an appropriate psychiatric specialist

Antimanic drugs

Lithium (Priadel) (mania) ([Click here to view Lithium therapy policy](#))

4.3 Antidepressants

Amitriptyline

Fluoxetine

Sertraline

For newly suspected cases please seek specialist advice.

4.4 Nausea and vertigo

Metoclopramide (Maximum of 5 days treatment only as per [MHRA restrictions](#))

Cyclizine

Prochlorperazine

Betahistine

Ondansetron (limited indications, post-operative nausea and vomiting only)

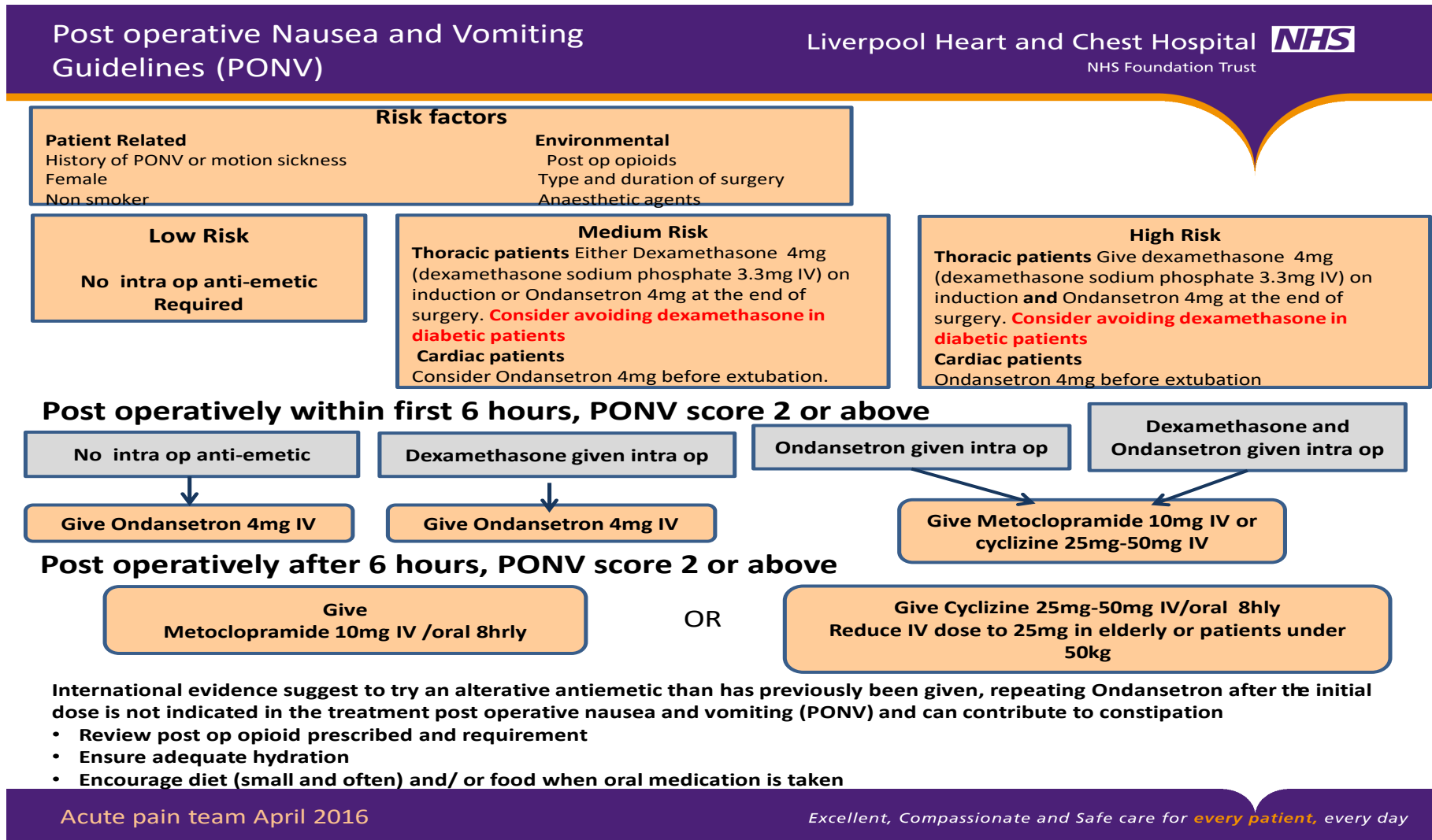
Levomopromazine 25mg/ml injection (Management of the terminally ill patient – anti-emetic in Palliative Care)

Consult the following algorithm for the management of post-operative nausea and vomiting' to 'See Acute Pain policy for the management of post-operative nausea and vomiting.

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Algorithm for the management of post-operative nausea and vomiting



Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary

4.6 Analgesics – Also see [Acute Pain Protocol](#)

Non-Opioid Analgesics <ul style="list-style-type: none">• Paracetamol	Non-Steroidal Anti-inflammatory drugs (NSAIDs) <ul style="list-style-type: none">• Ibuprofen• Naproxen• Ketorolac
Opioids Analgesics <ul style="list-style-type: none">• Codeine phosphate• Dihydrocodeine• Diamorphine• Morphine• Fentanyl patches/sublingual• Tramadol• Oxycodone• Buprenorphine Patches/Sublingual	Neuromodulators <ul style="list-style-type: none">• Pregabalin• Gabapentin• Ketamine

Compound oral analgesics, such as paracetamol plus an opioid, should not be prescribed because of the inflexibility in the dosage of such products. If an opioid analgesic is considered necessary then a single ingredient preparation should be used, such as dihydrocodeine or codeine phosphate tablets.

LHCH Acute Pain Analgesia Ladder

+ Adjuvant

- Ketorolac IV
- Diclofenac PR
- Oral Ibuprofen
- Neuropathic agents
- Pregabalin, Gabapentin
- Tramadol oral / IV
- Local anaesthetic Blocks (Levobupivacaine)
- Ketamine Infusion (on POCCU/HDU only)
- Oral Ketamine (inpatient use only)

- Codeine Phosphate
or
Dihydrocodeine
- Paracetamol

- Epidural (Fentanyl Levobupivacaine)
or
Morphine/ Oxycodone (PCA)
- +/- Paravertebral Infusion or Local anaesthetic Infusion
or
Oxycodone (Oxycontin MR & Oxynorm IR)
+ Paracetamol

- Paracetamol

STEP 1

MILD

STEP 2

MODERATE

STEP 3

SEVERE

**LHCH Acute Pain
Analgesia Ladder**

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Prophylaxis of migraine

Pizotifen

4.7 Antiepileptics

Carbamazepine
Phenytoin
Sodium valproate

Status epilepticus

Diazepam
Phenytoin

4.8 Parkinsonism and related disorders

Contact appropriate specialist in the management of Parkinson's disease and related disorders

Relief of intractable hiccup

Chlorpromazine
Haloperidol

4.9 Drugs used in substance dependence

Methadone (Addicts must be registered with the Home Office)
Nicotine (Various preparations available. Refer to smoking advisor)
[Varenicline NICE TA123](#)

Management of alcohol withdrawal – See Acute Alcohol Withdrawal-Assessment and Management Policy

Chlordiazepoxide
Diazepam
Lorazepam
Thiamine
Vitamin B substances with ascorbic acid injection (Pabrinex)

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

5. INFECTIONS

Please refer to the [Antimicrobial Policy](#) and [NICE TA158 Oseltamivir, amantadine \(review\) and zanamivir for the prophylaxis of influenza](#) and [TA168 Amantadine, oseltamivir and zanamivir for the treatment of influenza](#)

Colistimethate sodium and tobramycin dry powders for inhalation for treating pseudomonas lung infection in cystic fibrosis (TA276) - <https://www.nice.org.uk/guidance/ta276>

6. ENDOCRINE SYSTEM

6.1 Drugs used in diabetes

6.1.1 Insulins

Type	Drug	Brand	Notes
Short acting insulins	Soluble Insulin	Actrapid	For use in management of acutely ill or peri-procedural diabetic/non-diabetic patients requiring insulin only.
	Insulin Aspart Insulin Glulisine Insulin Lispro	Novorapid Apidra Humalog	For use in CF or Diabetes Specialist Nurse advice only
Long acting insulins	Insulin Detemir Insulin Glargine NICE TA53	Levemir Lantus	For use in CF or Diabetes Specialist Nurse advice only

**Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary**

Intermediate acting insulins	Biphasic Insulin Aspart	NovoMix 30	For use in CF or Diabetes Specialist Nurse advice only
	Biphasic Insulin Lispro	Humalog Mix 25	

6.1.2 Oral Diabetic Drugs

Type	Drugs Available
Sulfonylureas	Gliclazide
Biguanides	Metformin
	Metformin oral Solution
	Metformin M/R
Dipeptidylpeptidase – 4 inhibitors	Sitagliptin

6.1.2.3 Other Antidiabetic Drugs

Exenatide M/R 2mg s/c injection [NICE TA 248 Exenatide modified-release for the treatment of type 2 diabetes mellitus](#)

Liraglutide 6mg/mL s/c injection – [NICE TAG-TA203 Liraglutide for the treatment of type 2 diabetes mellitus](#)

Canagliflozin 100mg tablet – [NICE TA315 Canagliflozin for treatment of type 2 diabetes](#)

Canagliflozin

<http://www.panmerseyapc.nhs.uk/recommendations/documents/PS81.pdf?UNLID=107184015201672116058>

[NICE TAG 336 – Empagliflozin in combination therapy for treating type 2 diabetes](#)

Dapagliflozin in combination therapy for treating type 2 diabetes- NICE TA 288 - <https://www.nice.org.uk/Guidance/TA288>

Dapagliflozin

<http://www.panmerseyapc.nhs.uk/recommendations/documents/PS143.pdf?UNLID=107184015201672116516>

Liverpool Heart and Chest Hospital NHS Foundation Trust Drug Formulary

Dapagliflozin in triple therapy for treating type 2 diabetes

<https://www.nice.org.uk/guidance/ta418>

APC statement

<http://www.panmerseyapc.nhs.uk/recommendations/documents/PS195.pdf?UNLID=307045000201743144520>

Empagliflozin

<http://www.panmerseyapc.nhs.uk/recommendations/documents/PS125.pdf?UNLID=107184015201672116516>

Ertugliflozin as monotherapy or with metformin for treating type 2 diabetes – NICE TA 572

<https://www.nice.org.uk/guidance/ta572/resources/ertugliflozin-as-monotherapy-or-with-metformin-for-treating-type-2-diabetes-pdf-82607139445957>

Ertugliflozin with metformin and a dipeptidyl peptidase-4 inhibitor for treating type 2 diabetes

<https://www.nice.org.uk/guidance/ta583>

“Canagliflozin, dapagliflozin and empagliflozin as monotherapies in T2DM” NICE TA 390

<https://www.nice.org.uk/guidance/ta418?UNLID=734694823201746121910>

PanMersey hyperlink

<http://www.panmerseyapc.nhs.uk/recommendations/documents/PS80.pdf?UNLID=734694823201746121910>

For further information on the management of type 2 diabetes please consult NICE guidelines – [NICE clinical Guideline 87](#)

Hypoglycaemia

Glucagon

6.2 Thyroid and anti-thyroid drugs

Thyroid hormones

Levothyroxine (thyroxine)

Liothyronine

Antithyroid drugs

Carbimazole

Propylthiouracil

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

6.3 Corticosteroids

Prednisolone (not enteric coated*)
Dexamethasone
Hydrocortisone
Methylprednisolone

* There is currently no evidence to indicate that enteric coated prednisolone is less likely than uncoated prednisolone to cause peptic ulceration. The evidence that enteric coating is less likely to cause dyspepsia is unsatisfactory and there is no robust evidence to suggest that enteric coating of prednisolone confers gastrointestinal protection. There is however, evidence to suggest lack of disease control for some conditions in those taking enteric coated compared to uncoated prednisolone particularly in cystic fibrosis. Patients should not be commenced enteric coated prednisolone and those currently taking enteric coated should be advised to switch to ordinary tablet. The Pan Mersey Medicines Management committee does not support the use of enteric coated prednisolone in primary care.

6.5 Pituitary hormones

Tetracosactide
Vasopressin
Terlipressin

6.6 Drugs affecting bone metabolism

Disodium etidronate
Disodium pamidronate

7. URINARY TRACT DISORDERS

7.2 Vaginal anti-infective drugs

Clotrimazole 500mg pessary

7.4 Genito-urinary disorders

Urinary retention
Indoramin
Tamsulosin

Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary

Urinary frequency

Oxybutynin

Urological pain

Potassium citrate mixture

8. MALIGNANT DISEASE AND IMMUNOSUPPRESSION

8.1 Cytotoxic drugs

Bleomycin

8.2 Immunosuppressants

Azathioprine

Ciclosporin (Neoral)

8.3 Sex hormones and hormone antagonists

Progestogens

Medroxyprogesterone acetate

Megestrol acetate

Hormone antagonists

Tamoxifen

Octreotide

9. 9. NUTRITION AND BLOOD

9.1 Anaemias

Drug	Formulation	Strength	Usual treatment dose
Ferrous Sulphate	Tablets	200mg 65mg elemental iron	200mg BD-TDS
Ferrous Fumarate	Oral solution	140mg/5ml 45mg elemental iron/5ml	280mg BD
Folic Acid	Tablet	5mg	5mg OD
Hydroxocobalamin	IM injection	1mg	1mg three times a week for 2 weeks then 1mg every 2-3 months
Ferric Carboxymaltose (Ferrinject)	Solution for injection/infusion	50mg/ml	Refer to 'Iron Administration in Heart Failure Policy'
Iron Isomaltoside 1000 (Monofer)	Solution for injection/infusion	500mg/5ml	Refer to 'Monofer Pre-Operative Protocol'
Erythropoetin Beta (Neo-Recormon®) (consultant only)			

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

9.2 Fluids and electrolytes

Oral potassium – refer to Potassium Management Protocol

Drug	Formulation	Strength	Usual treatment dose
Potassium Chloride	Effervescent tablets (Sando K)	12mmol/tablet	2 TDS for 3 days
	Sugar free syrup (Kay-Cee-L)	1mmol/ml	10-25ml TDS

Potassium removal – refer also to Potassium Management Protocol

Drug	Formulation	Strength	Usual treatment dose
Calcium Resonium	Powder		Orally: 15g QDS
	Enema Kit		Rectally: 30g BD
Sodium Zirconium Cyclosilicate	Powder for oral suspension	5g, 10g	Initially 10g TDS then maintenance if required
Patiromer	Powder for oral suspension	8.4g, 16.8g and 25.2g	Initially 8.4g daily then maintenance 8.4g-16.8g daily

Prescribers should note the contents of [NICE TA599 Sodium zirconium cyclosilicate for treating hyperkalaemia](#)

Prescribers should note the contents of [NICE TA623 Patiromer for treating hyperkalaemia](#)

Oral sodium

Drug	Formulation	Strength	Usual treatment dose
Sodium Chloride (Slow Sodium)	Modified release tablet	600mg (10mmol each of Na ⁺ and Cl ⁻)	4-8 tablets per day

Oral bicarbonate

Drug	Formulation	Strength	Usual treatment dose
------	-------------	----------	----------------------

Liverpool Heart and Chest Hospital NHS Foundation Trust Drug Formulary

Sodium Bicarbonate	Capsules	500mg (6mmol each of Na ⁺ and HCO ₃ ⁻)	500mg tds
--------------------	----------	--	-----------

Intravenous fluids and electrolytes

Contact Pharmacy for availability of various solutions

Plasma substitutes

Plasma-Lyte 148 in Water
Geloplasma Infusion

Cardioplegia

Custodiol Cardioplegia
Cardioplegia solution (20ml)
Cardioplegia Infusion 500ml and 1000ml
For intra-operative use during cardiac surgery

Contact Perfusionists for further information

9.3 Intravenous nutrition

Contact Pharmacy or dietician for advice

9.4 Enteral nutrition

Nutritional Supplements

Supplement	Bottle size	Calories	Flavours available
Ensure Compact	125ml	2.4kcal/ml	Banana, Strawberry, Vanilla
Ensure Plus Juice	220mls	1.5kcal/ml	Fruit Punch, Lemon & Lime, Orange
Ensure Plus (milkshake style)	200mls	1.5kcal/ml	Chocolate, Vanilla, Strawberry

NB: Some flavours and feeds may need to be ordered into the trust and may not be available for 24 hours

Nutritional Supplements – On dietician advice only

Supplement	Bottle size	Calories	Flavours available
Fortisip Compact (Cystic Fibrosis Patients)	125mls	2.4kcal/ml	Strawberry
Fortisip Compact Protein	125mls	2.4kcal/ml	Banana, Berry, Mocha, Strawberry

Liverpool Heart and Chest Hospital NHS Foundation Trust Drug Formulary

Ensure TwoCal	200mls	2kcal/ml	Vanilla
Ensure Plus Fibre	200mls	1.5kcal/ml	Not stocked routinely
Scandishake	Powder supplement		Banana, Chocolate, Vanilla, Strawberry
Calshake	Powder supplement		Chocolate, Vanilla, Strawberry

NB: Some flavours and feeds may need to be ordered into the trust and may not be available for 24 hours

Modular Supplements - On dietician advice only

Supplement	Bottle size	Description
Pro-Cal Shot	125mls	3.4kcal/ml - Strawberry
ProSource Plus	30mls sachet	15g protein supplement
ProSource Jelly	118mls	20g protein per serving
Calogen	200mls	4.5kcal/ml

Dysphagia Supplements - On dietician advice only

Supplement	Bottle size	Description	Flavours available
Nutlis Complete Drink (Level 3)	125mls	2.4kcal/ml	Strawberry, Vanilla
Nutlis Clear	175g	Thickening powder	
Nutlis Fruit (Level 4)	150g pot	1.37kcal/g	Apple, Strawberry

NB: Some flavours and feeds may need to be ordered into the trust and may not be available for 24 hours

Enteral feeds

All Jevity feeds contain fibre, Osmolite feeds are fibre free

Feed name	Bottle size	Description
Jevity	500mls 1000mls	1kcal/ml 4g protein per 100mls
Jevity Plus	500mls 1000mls	1.2 kcal/ml 5.5g protein per 100mls
Jevity Plus HP	500mls	1.3kcal/ml 8g protein per 100mls
Jevity 1.5kcal	500mls 1000mls	1.5kcal/ml 6.38g protein per 100mls
Osmolite	500mls	1kcal/ml

Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary

	1000mls	4g protein per 100mls
Osmolite Plus	500mls 1000mls	1.2 kcal/ml 5.5g protein per 100mls
Osmolite 1.5	500mls 1000mls	1.5kcal/ml 6.38g protein per 100mls
TwoCal	1000mls	2kcal/ml 8.4g protein per 100mls
Vital 1.5	1000mls	1.5kcal/ml 6.75g protein per 100 mls Semi-elemental
Nepro HP	500mls	1.8kcal/ml 8.1g protein per 100mls Electrolyte restricted
Nutrison Low Na	500ml 1000ml	1kcal/ml and 4g protein per 100mls
Peptamen – on dietician advice only	500ml 1000ml	1kcal/ml and 4g protein per 100mls. Semi-elemental formula
Peptamen AF – on dietician advice only	500ml	1.5kcal/ml and 9.4g protein per 100mls. Semi elemental formula
Perative – on dietician advice only	1000ml	1.3kcal/ml and 6.7g protein per 100mls Semi elemental formula

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

9.5 Minerals

Calcium

Drug	Formulation	Strength	Usual treatment dose
Calcium carbonate	Adcal chewable tablet	1500mg (equivalent to 600mg calcium)	1-2 daily
	Cacit effervescent tablets	1250mg (equivalent to 500mg calcium)	1-2 daily
Calcium gluconate	Injection	10% (2.25mmol calcium in 10ml)	See Injectable Medicines Guide
Calcium chloride	Injection	5mmol in 5ml (14.7%)	See Injectable Medicines Guide
	Infusion	100mmol/L (1500ml)	

Magnesium

Drug	Formulation	Strength	Usual treatment dose
Magnesium aspartate (Magnasparate)	Powder sachet	243mg (10mmol/sachet)	1-2 sachets daily
Magnesium sulphate	Injection	50% (1g/2ml injection) 2ml, 5ml, 10ml	See Injectable Medicines Guide

Phosphate

Drug	Formulation	Strength	Usual treatment dose
Phosphate-Sandoz®	Effervescent tablets	1.936g (16.1mmol phosphate, 20.4mmol sodium, 3.1mmol potassium)	2 TDS
Potassium dihydrogen phosphate and disodium hydrogen phosphate anhydrous	Polyfusor	Na ⁺ 162 mmol/litre, K ⁺ 19 mmol/litre, PO ₄ ³⁻ 100 mmol/litre	See Injectable Medicines Guide

Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary

Zinc

Drug	Formulation	Strength	Usual treatment dose
Zinc sulphate (Solvazinc)	Effervescent tablets	125mg (45mg zinc)	125mg OD-TDS

9.6 Vitamins

Vitamin B

Drug	Formulation	Strength	Usual treatment dose
Thiamine (B1)	Tablets	50mg, 100mg	Alcohol withdrawal - 100mg TDS - refer to acute alcohol withdrawal policy Deficiency - 25-300mg daily
Pyridoxine (Isoniazid neuropathy prophylaxis only)	Tablets	10mg, 50mg	10-20mg OD
Vitamin B and C (Pabrinex®)	Injection		2 pairs TDS for 3-5 days – refer to Acute Alcohol Withdrawal Policy 2 pairs OD for refeeding syndrome
Vitamin B Co Strong	Tablets		2 TDS for 10 days for refeeding syndrome

Vitamin C

Drug	Formulation	Strength	Usual treatment dose
Ascorbic acid	Tablets	50mg,200mg,500mg	For use in scurvy only Prevention 25-75mg daily Treatment >250mg daily in divided doses

Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary

--	--	--	--

Vitamin D

Drug	Formulation	Strength	Usual treatment dose
Calcium carbonate and vitamin D (colecalfiferol)	Adcal D3 Chewable	Calcium carbonate 1500mg (equivalent to 600mg calcium), colecalciferol 400units	1-2 daily
	Adcal D3 Caplets	Calcium carbonate 750mg (equivalent to 300mg calcium), colecalciferol 200units	1-2 daily
	Adcal D3 Effervescent tablets	Calcium carbonate 1500mg (equivalent to 600mg calcium), colecalciferol 400units	1-2 daily
Colecalciferol	Capsules	800units	See Pan Mersey guidance: Treatment of Vitamin D Deficiency in Adults
		20 000units	
50 000units			
Oral solution	25 000units/ml		
Alfacalcidol	Capsules	250nanograms 500nanograms 1microgram	
	Sugar free drops	2micrograms/ml	250 nanogram - 5microgram OD
Calcitriol	Capsules	250nanograms 500nanograms	250nanogram - 5microgram OD

Vitamin E

Drug	Formulation	Strength	Usual treatment dose
Vitamin E	Capsules	400units	400 units OD

Liverpool Heart and Chest Hospital NHS Foundation Trust
Drug Formulary

Vitamin K

Drug	Formulation	Strength	Usual treatment dose
Menadiol	Tablets	10mg	10mg OD (water soluble for use in fat malabsorption states)
Phytomenadione	Tablets (Unlicensed)	10mg	10mg OD

Multivitamin preparations

Drug	Formulation	Strength	Usual treatment dose
Multivitamins	Tablets	Variable	1 OM Cystic fibrosis – 3 OD
	Drops (Dalavit)	Variable	0.6ml OD (14 drops) Cystic Fibrosis – 1ml OD
Paravit CF (Cystic fibrosis only)	Capsules	2 capsules or 0.5ml contains a total of 10,000 units of vitamin A, 3,000units of vitamin D3, 300 units of vitamin E and 10mg vitamin K1	2 OD
	Solution		0.5ml OD
Vitamin A&D (Cystic Fibrosis only)	Capsules	1 capsule contains 4500units of vitamin A, 450units of vitamin D3	1-3 OD
Forceval	Capsules	Multivitamin and mineral capsule	1 OD
	Soluble capsules		

Liverpool Heart and Chest Hospital NHS Foundation Trust Drug Formulary

Refeeding Guidelines:

Method of Feeding	Drug	Dose	Duration	Comments
Fed via feeding tube	Forceval soluble	1 OD	10 days	Fully dissolved
	Thiamine	100mg TDS	10 days	Fully dispersed in 10ml water
Orally fed	Forceval capsule	1 OD	10 days	
	Thaimine	100mg TDS	10 days	
	Vitamin B Co Strong	2 TDS	10 days	Not to be crushed
Parenteral Nutrition	Pabrinex	1 pair OD	3 days	Forceval is not needed

10. MUSCULOSKELETAL AND JOINT DISEASES

10.1 Drugs used in rheumatic diseases and gout

Non-steroidal anti-inflammatory drugs

Ibuprofen
Diclofenac (PR only)

NICE guidance (cyclo-oxygenase-2 selective inhibitors). NICE has recommended that cyclo-oxygenase-2 selective inhibitors (celecoxib, etodolac and meloxicam) should:

- **not** be used routinely in the management of patients with rheumatoid arthritis or osteoarthritis;
- be used in preference to standard NSAIDs **only** when clearly indicated (and

in accordance with UK licensing), for patients with a history of gastroduodenal ulcer or perforation or gastro-intestinal bleeding—in these patients even the use of cyclo-oxygenase-2 selective inhibitors should be considered very carefully; they should also be used in preference to standard NSAIDs for other patients at **high risk** of developing serious gastro-intestinal side-effects (e.g. those aged over 65 years, those who are taking other medicines which increase the risk of gastro-intestinal effects, those who are debilitated or those receiving long-term treatment with maximal doses of standard NSAIDs);

- **not** be used routinely in preference to standard NSAIDs for patients with cardiovascular disease; the benefit of cyclo-oxygenase-2 selective inhibitors is

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

reduced in patients taking concomitant low-dose aspirin and this combination is **not justified**.

There is no evidence to justify the simultaneous use of gastro-protective drugs with cyclo-oxygenase-2 selective inhibitors as a means of further reducing potential gastro-intestinal side-effects.

Local corticosteroid injections

Methylprednisolone

Drugs used in gout

Colchicine (acute attacks if need to avoid fluid retention)

Allopurinol (long term control)

10.2 Neuromuscular disorders

Drugs which enhance neuromuscular transmission

Pyridostigmine

Edrophonium

Skeletal muscle relaxants

Dantrolene

Baclofen

Diazepam

Nocturnal leg cramps

Quinine sulphate 300mg tablets

10.3 Topical antirheumatics

Benzydamine

11. DRUGS ACTING ON THE EYE

11.3 Anti-infective preparations

Antibacterials

Chloramphenicol (drops and ointment)

Antivirals

Aciclovir ointment

11.4 Corticosteroids

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Betamethasone drops
Prednisolone drops

11.5 Mydriatics

Tropicamide drops

11.6 Treatment of glaucoma

Contact Pharmacy for availability of specific treatments

11.8 Miscellaneous

Tear deficiency
Hypromellose drops

12. EAR, NOSE AND OROPHARYNX

12.1 Drugs acting on the ear

Anti-inflammatory and anti-infective preparations

Betamethasone drops
Gentamicin drops

Removal of ear wax

Sodium bicarbonate drops

12.2 Drugs acting on the nose

Nasal allergy

Beclometasone nasal spray (Beconase®)
Fluticasone nasal spray (Flixonase®)

Nasal staphylococci

Mupirocin
Naseptin®

12.3 Drugs acting on the oropharynx

Ulceration and inflammation

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Benzydamine mouthwash/spray (Difflam®)
Triamcinolone (Adcortyl) in Orabase
Choline salicylate gel (Bonjela®)

Fungal infections

Nystatin

Oral hygiene

Thymol (mouthwash tablets)
Chlorhexidine gluconate

Dry mouth

Glandosane® spray (Restricted use. Severe cases only)

13. SKIN

See NPSA alert regarding fire hazard with products containing 100g or more of paraffin

<http://www.nrls.npsa.nhs.uk/resources/?entryid45=59876>

Emollients

White soft paraffin
Hydromol ointment
Oilatum bath additive

Moisturisers

E45 cream
Diprobase

Barrier preparations

Metanium ointment
Cavilon barrier cream and film spray

Topical antipruritics

Crotamiton cream (Eurax)

Topical corticosteroids

Hydrocortisone 1%
Fucibet cream
Fucidin H cream

Sunscreens

Uvistat factor 30

Anti-infective skin preparations

Antibacterials

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Mupirocin
Silver sulfadiazine
Metronidazole gel

Antifungals

Clotrimazole

Antivirals

Aciclovir

Scabies and lice

Malathion

Disinfectants and cleansers

Chlorhexidine
Povidone iodine
Alcoholic iodine solution
Hydrogen peroxide

A8 WOUND MANAGEMENT

[See wound care formulary and guidelines](#)

14. IMMUNOLOGICAL PRODUCTS AND VACCINES

Tuberculin PPD (100units/ml)
Hepatitis B vaccine
Influenza vaccine
Pneumococcal vaccine
Tetanus Vaccine Adsorbed
Tetanus immunoglobulin
Normal immunoglobulin for IV use

15. ANAESTHESIA

15.1.1 Intravenous anaesthesia

Thiopental
Etomidate
Propofol
Ketamine

15.1.2 Inhalational anaesthesia

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Enflurane
Sevoflurane
Isoflurane

15.1.3 Antimuscarinics

Atropine
Glycopyrronium
Hyoscine hydrobromide

15.1.4 Sedative and analgesic peri-operative drugs

Anxiolytics and neuroleptics

Diazepam
Lorazepam
Midazolam

Non-opioid analgesics

Ketorolac
Dexmedetomidine (use only for post operative sedation/analgesia supplementation for patients after thoracoabdominal aortic aneurysm surgery)

Opioid analgesics

Alfentanil
Fentanyl
Remifentanil

15.1.5 Muscle relaxants

Atracurium
Mivacurium
Pancuronium
Rocuronium
Suxamethonium
Vecuronium

15.1.6 Anticholinesterases

Neostigmine
Edrophonium

15.1.6.1 Other drugs for reversal of neuromuscular blockade

Sugammadex

15.1.7 Antagonists for central and respiratory depression

Liverpool Heart and Chest Hospital NHS Foundation Trust

Drug Formulary

Doxapram
Flumazaniil
Naloxone

15.1.8 Malignant hyperthermia

Dantrolene

15.2 Local anaesthetics

Lidocaine (lignocaine)
Bupivacaine
Cocaine
Emla cream