The Pennine Acute Hospitals NHS
NHS Trust

Adult Loading Doses Policy

Guidance for the administration of medication loading doses to adult patients

Key words: loading dose, abciximab, acetylcysteine, aggrastat, alteplase, aminophylline, amiodarone, arrhythmia, asthma, digoxin, disopyramide, enoximone, eptifibatide, ethylene glycol, flecainide, fomepizole, haematemesis, hydralazine, integrilin, lidocaine, omeprazole, Paracetamol overdose, phenytoin, pulmonary embolism, reopro, tirofiban, tranexamic acid, warfarin

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Pennine Acute Hospital NHS Trust

Adult Loading Doses Policy

Main Revisions from previous issue	
Name of Previous Document:	Adult Loading Doses Policy
Previous Document Number:	EDT017
Previous Version Number:	2
Chapters, sections and pages which have been changed	Change to administration time for omeprazole loading dose, as per BNF recommendations – both factsheet and administration chart amended.

Contents

1. Introduction

1.1 A 'loading dose' is an initial large dose of a medicine used to ensure a quick therapeutic response. It is usually given for a short period before therapy continues with a lower maintenance dose. The use of loading doses of medicines can be complex and error-prone. Incorrect use of loading doses or subsequent maintenance regimens may lead to severe harm or death.

1.2 The National Reporting and Learning System (NRLS) have received many incidents relating to incorrect loading doses. The fatal and severe harmful incidents reported all related to incorrect loading doses, omitted or delayed administration of loading doses, or unintentional continuation of loading doses.

1.3 As a result, the National Patient Safety Agency (NPSA) produced a Rapid Response Report (NPSA/2010/ RRR018) recommending that all healthcare sectors put systems in place to reduce the risk of errors associated with medication loading doses.

2. Aims / Purpose

2.1 This document provides guidance to medical, nursing and pharmacy staff on the prescribing, administering and checking of loading doses and subsequent maintenance doses of medication used within the Trust.

2.2 This helps to ensure that prescriptions are accurate and safe; that medications are prepared and administered correctly and in a timely fashion; and that appropriate monitoring is undertaken.

3. Scope

3.1 This document is specific to medications with loading doses **prescribed to adults**. This is intended to be used by doctors, nursing staff and pharmacy personnel who will prescribe, prepare, administer and check medications.

3.2 This document should be read in conjunction with related Trust Policies & Guidelines including:

- Medicines Policy (EDC018)
- Policy for Training in Safe Administration of Medicines (EDN031)
- Procedure for Administration of Prescribed Medicines to Inpatients (EDT004)
- Accident & Incident Reporting Policy (EDQ008)
- and any others referenced herein.

These can be accessed via the 'Documents' pages of the Trust Intranet.

4. Roles, Responsibilities and Accountabilities

4.1 Divisional directors and managers have responsibilities for overseeing compliance with this policy. Divisional directors and managers will ensure that action plans drawn up to improve compliance as a result of audits and reviews of serious untoward incidents of non-compliance are implemented.

4.2 Divisional Nurse Managers, Consultant Medical Staff, Ward Managers and Pharmacy Managers are responsible for the implementation of these guidelines within their teams.

4.3 Individual staff members must understand their professional responsibilities and practice in accordance with:

- European, national and local legislation.
- Pennine Acute Trust's policies, protocols and guidelines
- Individual codes of professional conduct and scope of practice.
- The knowledge and skills framework and ongoing professional development.

4.4 The Pharmacy Department shall provide, wherever practicable, preparations in such a form as will remove the need for further manipulation at clinical level other than for the purposes of administration.

4.5 Recommendations on drug use and doses change periodically. The policy is up to date at the time of publication and is updated at regular intervals. However, If clinicians are in any doubt about a drug's use the BNF should be consulted and pharmacy contacted for advice if the doubt persists (the on call pharmacist is available for advice out of hours).

4.6 Where a particular area has requirements to routinely deviate from a particular practice or procedure, the amended procedure must be agreed in writing by Pennine Acute Drugs and Therapeutics (PADAT), who shall take such specialist advice as may be thought necessary. Specialist advice must be sought where an occasional deviation from the procedure is required.

4.7 All staff with responsibilities for prescription, preparation, administration and checking of medications are responsible for reporting any adverse or suspected adverse reactions to drugs to the Medicines & Healthcare Products Regulatory Agency (MHRA) as per the Trust's Medicines Policy (EDC018) and for additionally reporting any near misses, accidents, and/or incidents as per the Trust's Accident & incident Reporting Policy (EDQ008).

5. The Policy itself

5.1 The following eighteen drugs have been identified as needing additional guidance for the administration of their loading and maintenance doses. Each page includes a 'factsheet' – this is a monograph for each individual drug, providing essential information for its safe and appropriate administration.

5.2 Where appropriate, there are also 'Intravenous Infusion Administration Record charts' that can be printed off and completed at the point of prescribing and administration. These charts should be either attached to the in-patient drug chart and used in conjunction with the relevant factsheet or cross referenced to the electronic prescription and medication administration (ePMA) record by use of an alert or protocol and kept at the patients bedside. In ward areas where use of these charts is common, they can be ordered directly from supplies using the codes provided on the charts below.

5.3 Guidelines for the administration of other medications with loading doses already exist within other Pennine Acute Hospitals NHS Trust (PAHNT) guidelines / policies. Therefore, for the following listed drugs, the relevant document should be used:

- **Gentamicin, Vancomycin, teicoplanin, voriconazole, caspofungin:** Antibiotic Policy for Adult Patients (EDT007)
- **Alteplase (for CVA):** Stroke Thrombolysis Assessment Policy (CPME082)

5.4 Administration charts for other medications with loading doses already exist within the Trust and are available to order from Supplies. Therefore, for the following listed drugs, the relevant chart should be used:

- **Warfarin:** Inpatient oral anticoagulant record and dosing chart (WPH544)
- **Heparin:** Adult prescription and administration record for intravenous heparin infusion (WPH555).

ABCIXIMAB

INDICATION Prevention of cardiac ischaemic complications in patients awaiting / undergoing PCI

PRESENTATION 10mg / 5mL vial

LOADING DOSE	**IV:** 250micrograms/kg
MAINTENANCE DOSE	**IV:** 0.125micrograms/kg/minute continued for 12 hours

RECONSTITUTION & ADMINISTRATION

The amount (in mL) of abciximab required for the loading dose and the maintenance infusion can be determined **using the ReoPro® Nomogram overleaf.**

Solutions must be filtered upon admixture or during administration using a sterile, non-pyrogenic, low protein-binding 0.2µm or 0.22µm filter.

Draw the volume for the loading dose into a syringe and administer undiluted as an IV bolus over one minute.

Then draw the volume for the maintenance infusion into either:

- a 50mL syringe (for infusion via a syringe driver), diluting to 50mL with sodium chloride 0.9% or glucose 5%. Administer at a rate of 4mL/hour.
  OR
- a 250mL infusion bag of sodium chloride 0.9% or glucose 5%. Administer at a rate of 19mL/hour.

MONITORING Platelets, activated clotting time (ACT), prothrombin time (PT), activated partial thromboplastin time (APTT), ECG, vital signs, haemoglobin and haematocrit – consult product information for full details available via the Electronic Medicines Compendium: www.medicines.org.uk/EMC/medicine/610/SPC/Reopro

OTHER COMMENTS Store unused vials of abciximab at 2-8°C. Do not freeze or shake.

Nomogram to calculate ReoPro dosage for bolus and infusion (data for 50 ml syringe driver and 250 ml infusion bag)

Patient weight (kg)	45	46	47	48	49	50	51	52	53	54	55	56	57
(lb)	99-100	101-102	103-104	105-106	107-109	110-111	112-113	114-115	116-117	118-120	121-122	123-124	125-126
IV bolus (ml)	5.6	5.8	5.9	6.0	6.1	6.3	6.4	6.5	6.6	6.8	6.9	7.0	7.1
50 ml IV infusion (ml)	2.1	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.5	2.5	2.6	2.6	2.7
250 ml IV infusion (ml)	2.2	2.3	2.3	2.3	2.4	2.4	2.5	2.5	2.6	2.6	2.7	2.7	2.8

Patient weight (kg)	58	59	60	61	62	63	64	65	66	67	68	69	70
(lb)	127-128	129-130	131-133	134-135	136-137	138-139	140-141	142-144	145-146	147-148	149-150	151-152	153-155
IV bolus (ml)	7.3	7.4	7.5	7.6	7.8	7.9	8.0	8.1	8.3	8.4	8.5	8.6	8.8
50 ml IV infusion (ml)	2.7	2.8	2.8	2.9	2.9	3.0	3.0	3.0	3.1	3.1	3.2	3.2	3.3
250 ml IV infusion (ml)	2.8	2.9	2.9	3.0	3.0	3.1	3.1	3.2	3.2	3.3	3.3	3.4	3.4

Patient weight (kg)	71	72	73	74	75	76	77	78	79	80	81	82	83
(lb)	156-157	158-159	160-161	162-163	164-166	167-168	169-170	171-172	173-174	175-177	178-179	180-181	182-183
IV bolus (ml)	8.9	9.0	9.1	9.3	9.4	9.5	9.6	9.8	9.9	10.0	10.1	10.3	10.4
50 ml IV infusion (ml)	3.3	3.4	3.4	3.5	3.5	3.6	3.6	3.7	3.7	3.8	3.8	3.8	3.8
250 ml IV infusion (ml)	3.5	3.5	3.6	3.6	3.7	3.7	3.8	3.8	3.9	3.9	3.9	3.9	3.9

Patient weight (kg)	84	85	86	87	88	89	90	91	92	93	94	95	96
(lb)	184-185	186-188	189-190	191-192	193-194	195-196	197-199	200-201	202-203	204-205	206-207	208-210	211-212
IV bolus (ml)	10.5	10.6	10.8	10.9	11.0	11.1	11.3	11.4	11.5	11.6	11.8	11.9	12.0
50 ml IV infusion (ml)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
250 ml IV infusion(ml)	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9

Patient weight (kg)	97	98	99	100	101	102	103	104	105	106	107	108	109
(lb)	213-214	215-216	217-218	219-221	222-223	224-225	226-227	228-229	230-232	233-234	235-236	237-238	239-240
IV bolus (ml)	12.1	12.3	12.4	12.5	12.6	12.8	12.9	13.0	13.1	13.3	13.4	13.5	13.6
50 ml IV infusion (ml)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
250 ml IV infusion(ml)	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9

Patient weight (kg)	110	111	112	113	114	115	116	117	118	119	120	121	122
(lb)	241-243	244-245	246-247	248-249	250-251	252-254	255-256	257-258	259-260	261-262	263-265	266-267	268-269
IV bolus (ml)	13.8	13.9	14.0	14.1	14.3	14.4	14.5	14.6	14.8	14.9	15.0	15.1	15.3
50 ml IV infusion (ml)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
250 ml IV infusion (ml)	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9

Patient weight (kg)	123	124	125	126	127	128	129	130	131	132	133	134	135
(lb)	270-271	272-273	274-276	277-278	279-280	281-282	283-284	285-287	288-289	290-291	292-293	294-295	296-298
IV bolus (ml)	15.4	15.5	15.6	15.8	15.9	16.0	16.1	16.3	16.4	16.5	16.6	16.8	16.9
50 ml IV infusion (ml)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
250 ml IV infusion (ml)	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9

Patient weight (kg)	136	137	138	139	140	141	142	143	144	145	146	147	148
(lb)	299-300	301-302	303-304	305-306	307-309	310-311	312-313	314-315	316-317	318-320	321-322	323-324	325-326
IV bolus (ml)	17.0	17.1	17.3	17.4	17.5	17.6	17.8	17.9	18.0	18.1	18.3	18.4	18.5
50 ml IV infusion (ml)	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
250 ml IV infusion(ml)	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9

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ACETYLCYSTEINE

INDICATION Paracetamol overdose

PRESENTATION 2gram / 10mL ampoule

LOADING DOSE	**1st IV infusion:** 150mg / kg (max 16.5grams) over 1 hour
	2nd IV infusion: 50mg / kg (max 5.5grams) over 4 hours
	3rd IV infusion: 100mg / kg (max 11grams) over 16 hours
MAINTENANCE DOSE*	**IV:** 100mg / kg (max 11grams) over 16 hours

**Continuing maintenance dose on the advice of gastroenterologist / liver specialist only*

RECONSTITUTION & ADMINISTRATION Use the table opposite to determine the dose and volume of acetylcysteine to be administered for each infusion. ***Complete administration chart overleaf.***

MONITORING Hypersensitivity reactions may occur within 15–60 minutes of the start of the infusion. Monitor patients for symptoms such as flushing, itching, hypotension, tachycardia or bronchospasm. Reactions usually resolve by stopping the infusion and then restarting at a lower rate

OTHER COMMENTS Acetylcysteine solutions may turn light purple – however the solution may still be used.

For full guidelines on the management of paracetamol overdose with acetylcysteine, consult the BNF and/or Toxbase.

PATIENT WEIGHT (kg)	DOSE AND VOLUME					
	1st Infusion		*2nd Infusion*		*3rd Infusion*	
	mg	mL	mg	mL	mg	mL
40	6000	30	2000	10	4000	20
42	6300	31.5	2100	10.5	4200	21
44	6600	33	2200	11	4400	22
46	6900	34.5	2300	11.5	4600	23
48	7200	36	2400	12	4800	24
50	7500	37.5	2500	12.5	5000	25
52	7800	39	2600	13	5200	26
54	8100	40.5	2700	13.5	5400	27
56	8400	42	2800	14	5600	28
58	8700	43.5	2900	14.5	5800	29
60	9000	45	3000	15	6000	30
62	9300	46.5	3100	15.5	6200	31
64	9600	48	3200	16	6400	32
66	9900	49.5	3300	16.5	6600	33
68	10200	51	3400	17	6800	34
70	10500	52.5	3500	17.5	7000	35
72	10800	54	3600	18	7200	36
74	11100	55.5	3700	18.5	7400	37
76	11400	57	3800	19	7600	38
78	11700	58.5	3900	19.5	7800	39
80	12000	60	4000	20	8000	40
82	12300	61.5	4100	20.5	8200	41
84	12600	63	4200	21	8400	42
86	12900	64.5	4300	21.5	8600	43
88	13200	66	4400	22	8800	44
90	13500	67.5	4500	22.5	9000	45
92	13800	69	4600	23	9200	46
94	14100	70.5	4700	23.5	9400	47
96	14400	72	4800	24	9600	48
98	14700	73.5	4900	24.4	9800	49
100	15000	75	5000	25	10000	50
102	15300	76.5	5100	25.5	10200	51
104	15600	78	5200	26	10400	52
106	15900	79.5	5300	26.5	10600	53
108	16200	81	5400	27	10800	54
110	16500	82.5	5500	27.5	11000	55
Glucose 5%	200ml		500ml		1000ml	
Infusion Time	1 HOUR		4 HOURS		16 HOURS	

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ACETYLCYSTEINE
Intravenous Infusion Administration Record

Patient weight:	kg

It is mandatory to complete this section	
ALLERGY STATUS: **Medicine / Substance**	**Reaction**
Sign (NAME)	**Date**

First name:	Surname:	
Hospital No:	NHS No:	DOB:
Consultant: *Use addressograph label*	Ward:	Hosp:

See overleaf for prescribing and preparation guidelines

INITIAL DOSE: 150mg/kg over 1 hour MAXIMUM 16.5g				**ADMINISTRATION RECORD**				
Date:	Acetylcysteine ……..…..…mg (…..ml) in 200mL glucose 5% over 1 hour	Sign	Pharm	Batch	Start	Sign / Witness	Volume	Stop

2nd DOSE: 50mg/kg over 4 hours MAXIMUM 5.5g					**ADMINISTRATION RECORD**				
Date:	Acetylcysteine ……..……...mg (…..ml) in 500mL glucose 5% over 4 hours	Rate 125ml/hr	Sign	Pharm	Batch	Start	Sign / Witness	Volume	Stop

3rd DOSE: 100mg/kg over 16 hours MAXIMUM 11g					**ADMINISTRATION RECORD**				
Date:	Acetylcysteine ……..……...mg (…..ml) in 1000mL glucose 5% over 16 hours	Rate 62.5ml/hr	Sign	Pharm	Batch	Start	Sign / Witness	Volume	Stop

MAINTENANCE (on advice of gastroenterologists / liver specialists ONLY): 100mg/kg over 16 hours MAXIMUM 11g					**ADMINISTRATION RECORD**				
Date:	Acetylcysteine ……..……...mg (…..ml) in 1000mL glucose 5% over 16 hours	Rate 62.5ml/hr	Sign	Pharm	Batch	Start	Sign / Witness	Volume	Stop

ALTEPLASE

INDICATION Thrombolysis in acute massive pulmonary embolism (PE)

PRESENTATION 10mg vial, 20mg vial, 50mg vial

LOADING DOSE	**IV:** 10mg
MAINTENANCE DOSE	Body weight >65kg: 90mg Body weight <65kg: 1.5mg/kg (in total)

RECONSTITUTION & ADMINISTRATION

Reconstitute each vial with the diluent provided (WFI) to produce a 1mg/mL solution.

Example 1: Patient weight >65kg
Loading dose 10mg + maintenance dose 90mg = 100mg
Reconstitute 100mg with 100mL WFI (1mg/mL)

Example 2: Patient weight <65kg
Patient weight = 62kg
Total dose (1.5mg/kg) = 93mg
Reconstitute 100mg with 100mL WFI (1mg/mL), but only 93mL will be required for this dose.

Withdraw 10mL (10mg) and give as an IV bolus over 1–2 minutes.

Infuse remainder of solution over 2 hours.

OTHER COMMENTS

The total dose should not exceed 100mg.

Following administration patients should be initiated on Heparin for ongoing treatment of the thromboembolism

AMINOPHYLLINE

INDICATION Severe reversible airway obstruction unresponsive to conventional therapies, **ONLY after consultation with senior medical staff.**

PRESENTATION 250mg / 10mL ampoules

IS THE PATIENT OBESE (BMI >30)?
If YES use IDEAL BODY WEIGHT (see calculation below)

LOADING DOSE	*NOT to be given if patient already taking oral aminophylline or theophylline and had a dose in last 24 hours*	**IV:** 5mg / kg (MAX 500mg)
MAINTENANCE DOSE	Elderly or heart failure	**IV:** 0.3mg / kg / hour
	Non-smoker	**IV:** 0.5mg / kg / hour
	Smoker	**IV:** 0.8mg / kg / hour

IDEAL BODY WEIGHT CALCULATION (kg)
MEN: 50 + (2.3 x height in inches > 5 ft)
WOMEN: 45 + (2.3 x height in inches > 5 ft)

RECONSTITUTION & ADMINISTRATION
The loading dose should be added to 100ml of sodium chloride 0.9% and administered over 20 minutes.

For the maintenance doses, add 500mg of aminophylline to 500mg of sodium chloride 0.9% or glucose 5% to create a 1mg/mL solution.

See administration chart overleaf

MONITORING
Serum theophylline levels **must** be taken:
- 6 hours after starting the infusion
- then at least every 24 hours whilst on the infusion
- or at any point if toxicity suspected

The therapeutic range is usually 10–20 mg/L.
In **asthma** therapeutic benefit is seen between **5-15mg/L** and is associated with fewer side effects.
Infusion rates should be adjusted accordingly. For advice regarding levels, contact your ward pharmacist or Medicines Information department.

OTHER COMMENTS
Theophylline is the active constituent of aminophylline, and this is measured in the serum.
Theophylline interacts with many other drugs (eg: ciprofloxacin, clarithromycin, erythromycin, carbamazepine) which can lead to theophylline toxicity – consult BNF for full details.
Signs of toxicity include: nausea, tachycardia, irritability, arrhythmias and convulsions.

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AMINOPHYLLINE
Intravenous Infusion Administration Record

Patient weight:	kg
Ideal body weight:	kg

First name:	Surname:	
Hospital No:	NHS No:	DOB:
Consultant:	Ward:	Hosp:

Use addressograph label

It is mandatory to complete this section

ALLERGY STATUS: Medicine / Substance	Reaction
Sign (NAME)	**Date**

See overleaf for prescribing guidelines

LOADING DOSE: 5mg/kg over 20 minutes

No loading dose if already taking theophyline or aminophyline

ADMINISTRATION RECORD

Date:		Sign	Pharm	Batch	Start	Sign / Witness	Volume	Stop
	Aminophylline …….mg in 100mL sodium chloride 0.9% over 20minutes							

MAINTENANCE DOSE

Patient	Dose	40kg	50kg	60kg	70kg	80kg	90kg
Elderly or Heart Failure	0.3mg/kg/hour	12	15	18	21	24	27
Non-Smoking Adult	0.5mg/kg/hour	20	25	30	35	40	45
Smoking Adult	0.8mg/kg/hour	32	40	48	56	64	72

Initial maintenance infusion rate in mL/hour.

Use ideal body weight for obese patients

Date:		Dose mg/kg/hr	Rate mL/hour	Sign	Pharm	Batch	Start	Sign / Witness	Volume	Time completed
	Aminophylline 500mg in 500mL sodium chloride 0.9%* or glucose 5%*									
Check theophylline level 6 hours after loading dose. THEOPHYLLINE LEVEL				Date and time taken:				Level:		mg/L
Date:	**Aminophylline 500mg in 500mL** sodium chloride 0.9%* or glucose 5%*									
THEOPHYLLINE LEVEL				Date and time taken:				Level:		mg/L
Date:	**Aminophylline 500mg in 500mL** sodium chloride 0.9%* or glucose 5%*									
THEOPHYLLINE LEVEL				Date and time taken:				Level:		mg/L
Date:	**Aminophylline 500mg in 500mL** sodium chloride 0.9%* or glucose 5%*									
THEOPHYLLINE LEVEL				Date and time taken:				Level:		mg/L

**Delete as required*

INFUSION BAGS SHOULD BE CHANGED AT LEAST EVERY 24 HOURS AS PER TRUST POLICY

WPH549

AMIODARONE - Oral

INDICATION Treatment of arrhythmias

PRESENTATION 100mg tablets
200mg tablets

LOADING DOSE	**Oral:** 200mg three times daily for seven days
	followed by 200mg twice daily for seven days
MAINTENANCE DOSE	**Oral:** 200mg once daily (or the minimum required to control the arrhythmia)

MONITORING LFTs and TFTs at baseline and every 6 months

OTHER COMMENTS Amiodarone interacts with many other drugs (eg: simvastatin, warfarin, digoxin) – consult BNF for full details.

AMIODARONE - Intravenous

INDICATION Treatment of arrhythmias

PRESENTATION 150mg / 3mL ampoule
300mg / 6mL ampoule

LOADING DOSE	**IV:** 300mg
MAINTENANCE DOSE	**IV:** 900mg over 24 hours

RECONSTITUTION & ADMINISTRATION

The loading dose should be added to 250ml of glucose 5% and administered over 30 minutes.

For the initial maintenance doses, add 900mg amiodarone to 500mL glucose 5% and administer at a rate of 21mL/hour.

See administration chart overleaf

MONITORING

ECG monitoring required
LFTs and TFTs at baseline and every 6 months

OTHER COMMENTS

Amiodarone injection is irritant to veins so give via a central line when possible. Check vascular access site regularly for any signs of irritation.

Amiodarone interacts with many other drugs (eg: simvastatin, warfarin, digoxin) – consult BNF for full details.

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AMIODARONE

Intravenous Infusion Administration Record

See overleaf for prescribing guidance

Patient weight: kg

It is mandatory to complete this section	
ALLERGY STATUS: **Medicine / Substance**	**Reaction**
Sign (NAME)	**Date**

First name:	Surname:		
Hospital No:	NHS No:	DOB:	
Consultant: *Use addressograph label*		Ward:	Hosp:

LOADING DOSE:				ADMINISTRATION RECORD				
Date:	**Amiodarone 300mg** in 250mL glucose 5% over 30minutes	Doctor Sign and PRINT	Pharm	Batch	Start	Sign / Witness	Volume	Stop

MAINTENANCE DOSE: Continuous infusion					ADMINISTRATION RECORD				
Date:	**Amiodarone 900mg** in 500mL glucose 5% over 24hours	Rate **21** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign / Witness	Volume	Stop
Date:	**Amiodarone 900mg** in 500mL glucose 5% over 24hours	Rate **21** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign / Witness	Volume	Stop
Date:	**Amiodarone 900mg** in 500mL glucose 5% over 24hours	Rate **21** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign / Witness	Volume	Stop
Date:	**Amiodarone .....mg** in 500mL glucose 5% over 24hours	Rate **21** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign / Witness	Volume	Stop
Date:	**Amiodarone .....mg** in 500mL glucose 5% over 24hours	Rate **21** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign / Witness	Volume	Stop

WPH550

DIGOXIN

INDICATION Rapid digitalisation in supraventricular arrhythmias

PRESENTATION
IV: 500micrograms / 2mL ampoule
Oral: 62.5, 125 and 250microgram tablets
50microgram/mL elixir

LOADING DOSE	**Oral *(preferred route for loading)*:** Three doses of 250–500micrograms given 6 hours apart
	IV* *(IV route rarely necessary)*: Two doses of 500micrograms given 12 hours apart
MAINTENANCE DOSE	**Oral:** usual range 125–250 micrograms daily

**Not to be given to patients who have received digoxin or other cardiac glycosides during the previous 2 weeks.*

RECONSTITUTION & ADMINISTRATION Add required IV dose to a 50–100mL bag of sodium chloride 0.9% or glucose 5%. Administer over at least 10 minutes, but preferably over 2 hours or more.

MONITORING Renal function and serum potassium concentration.

The therapeutic range is 0.5–2 nanograms/mL. Levels (if required) should be taken at least 6 hours post-dose.

Therapeutic drug monitoring (TDM) is not considered to be necessary in patients with a satisfactory clinical response in the absence of signs or symptoms of toxicity. TDM is useful if poor compliance is suspected, if response is poor, if renal function is fluctuating or during drug interactions.

OTHER COMMENTS Doses may need to be reduced in the elderly or in patients with impaired renal function.

IV administration is more likely to cause adverse effects, and therefore should only be considered in an emergency when oral loading cannot be used.

Signs of toxicity include nausea, vomiting, abdominal pain, dizziness, confusion and blurred vision.

Digoxin interacts with many other drugs (eg: amiodarone, calcium channel blockers) – consult BNF for full details.

DISOPYRAMIDE

INDICATION Management of supraventricular and ventricular arrhythmias

PRESENTATION **IV:** 50mg / 5mL ampoule
Oral: 100mg, 150mg capsules

LOADING DOSE	**IV**: 2mg / kg (max 150mg)
MAINTENANCE DOSE	Followed immediately by either: **Oral:** 200mg stat, then 200mg every 8 hours *or* **IV*:** 20–30mg / hour

RECONSTITUTION & ADMINISTRATION

Give the loading dose as an undiluted IV bolus over at least 5 minutes.

If the maintenance infusion is required, the dose should be diluted to a convenient volume with sodium chloride 0.9% or glucose 5%.

MONITORING ECG monitoring required. Renal function and serum potassium concentration.

OTHER COMMENTS

If the arrhythmia recurs after the initial loading dose, the IV injection may need to be repeated. A maximum IV dose of 300 mg should not be exceeded in the first hour.

The maximum dose (including loading doses and any oral doses) is 800mg in 24 hours.

Rapid infusion may cause profuse sweating.

*The maintenance infusion is generally only required in patients who are unable to take oral medication or in particularly serious arrhythmias**.**

Disopyramide interacts with many other drugs (eg: amiodarone, beta-blockers, verapamil, some antimicrobials) – consult BNF for full details.

ENOXIMONE

INDICATION Congestive heart failure

PRESENTATION 100mg / 20mL

LOADING DOSE	**IV:** 90 micrograms/kg/minute for 10–30 minutes
MAINTENANCE DOSE	**IV:** 5–20 micrograms/kg/minute

RECONSTITUTION & ADMINISTRATION

Dilute one ampoule with 20mL sodium chloride 0.9% to give a 2.5mg/mL solution.

Administer via a syringe pump into a central line or large peripheral vein.

Infuse at an initial rate of 2.16mL / kg / hour for 10–30 minutes (loading dose).

Once an adequate response is achieved, reduce the infusion rate to a maintenance of 0.12–0.48mL / kg / hour.

Enoximone may also be administered by slow IV injection – consult BNF for doses.

MONITORING Blood pressure.

OTHER COMMENTS

The maximum dose (including loading dose) is 24mg/kg in 24 hours.

The loading dose is sometimes omitted as it has a strong hypotensive effect.

The same solution may be used for both the loading and the maintenance doses.

Enoximone is incompatible with glucose solutions. Plastic syringes and administration sets should be used as enoximone is incompatible with glass.

EPTIFIBATIDE

INDICATION Prevention of early myocardial infarction in patients with unstable angina or NSTEMI

PRESENTATION 20mg / 10mL vial (solution for **injection**)
75mg / 100mL vial (solution for **infusion**)

LOADING DOSE	**IV:** 180 micrograms / kg
MAINTENANCE DOSE	**IV:** 2 micrograms / kg / minute

RECONSTITUTION & ADMINISTRATION

Both the 'solution for injection' and the 'solution for infusion' are to be administered undiluted.

The loading dose should be administered using the 'solution for injection'. A volume of 0.09mL/kg should be given by slow IV injection over 1–2 minutes.

The maintenance dose should be started immediately after the loading dose using the 'solution for infusion'. Administer at a rate of 0.16mL/kg/hour for 72–96 hours.

MONITORING

Blood pressure.

Platelet counts should be monitored prior to treatment, within 6 hours of administration and at least once daily thereafter while on therapy.

OTHER COMMENTS

The maintenance dose should be reduced to 1microgram / kg / minute in patients with moderate renal impairment (creatinine clearance ≥30 to <50mL/minute).

FLECAINIDE

INDICATION Treatment of arrhythmias

PRESENTATION 150mg / 15mL ampoule
50mg, 100mg tablets

LOADING DOSE	**IV:** 2mg / kg (max 150mg)
MAINTENANCE DOSE	**IV:** 1.5mg / kg / hour for 1 hour *Subsequently reduced to:* **IV:** 100–250 micrograms / kg / hour

RECONSTITUTION & ADMINISTRATION

Flecainide injection is ready diluted, but it may be further diluted to a convenient volume with glucose 5% (eg: 20–500mL).

Administer loading dose over 30 minutes.

If sodium chloride is used as a diluent, the dose must be added to at least 500mL sodium chloride 0.9% - smaller volumes may result in drug precipitation.

MONITORING ECG monitoring required.

OTHER COMMENTS

The maximum dose (including loading dose) is 600mg in 24 hours.

Following a loading dose, the maintenance infusion may not be required. This will be decided after assessment of the ECG. IV administration should not generally exceed 24 hours.

In patients with renal impairment (creatinine clearance <35 mL/min), the above doses should be reduced by half.

Switching to oral therapy should be accomplished as soon as possible by stopping the infusion and administering the first required oral dose – consult BNF for dose.

Flecainide interacts with many other drugs (eg: amiodarone, verapamil) – consult BNF for full details.

FOMEPIZOLE

INDICATION Ethylene glycol poisoning **[unlicensed use]**

PRESENTATION 1.5g/1.5ml (1g/1ml) vial or 100mg in 20ml (5mg/ml) ampoules

LOADING DOSE	**IV:** 15mg/kg (max 1650mg)
MAINTENANCE DOSE	**IV**: 10mg/kg (max 1100mg) every 12 hours for 4 doses then 15mg/kg every 12 hours. Commence 12 hours after the loading dose **DOSAGE IN RENAL DIALYSIS** **IV:** 10mg/kg every 4 hours **or** by continuous infusion at a rate of 1mg/Kg/hr

RENAL DIALYSIS

DOSE AT THE BEGINNING OF HAEMODIALYSIS	
If < 6 hrs since last dose	**If > 6 hrs since last dose**
Do not administer dose	Give next scheduled dose
DOSE DURING HAEMODIALYSIS	
Every 4 hours or by continuous infusion (see above)	
DOSE AT THE TIME HAEMODIALYSIS IS COMPLETED	
Time between last dose and the end of dialysis	
<1 hour	Do not administer dose at the end of dialysis
1-3 hours	Administer ½ of next scheduled dose
> 3 hours	Administer next scheduled dose
MAINTENANCE DOSING OFF HAEMODIALYSIS	
Give next scheduled dose 12 hours from last dose administered	

RECONSTITUTION & ADMINISTRATION Dilute appropriate dose to 250-500mL of Sodium Chloride 0.9% or Glucose 5%. Infuse over 30-45 minutes.

MONITORING Continue infusion until ethylene glycol or methanol levels are either undetectable or <50mg/dl and patient is asymptomatic with normal pH

OTHER COMMENTS Out of hours an initial supply is available in the Emergency Cupboard on each acute site. Please contact On call Pharmacist to arrange further supplies

HYDRALAZINE

INDICATION Hypertensive crisis

PRESENTATION 20mg ampoule

LOADING DOSE	**IV:** 200–300 micrograms / minute
MAINTENANCE DOSE	Once an adequate response has been achieved, the dose can be reduced to: **IV:** 50–150 micrograms / minute*

RECONSTITUTION & ADMINISTRATION Reconstitute 20mg ampoule with 1mL WFI, then dilute to 500mL with sodium chloride 0.9% (this gives a 0.04mg / mL solution).

Infuse at an initial rate of 300–450mL / hour, reducing to 75–225mL / hour once an adequate response has been achieved.

MONITORING Blood pressure and heart rate.

OTHER COMMENTS ***Maintenance flow rates must be determined individually based on target blood pressure, but are usually within the range 50–150 micrograms / minute.

LIDOCAINE

INDICATION Treatment of ventricular arrhythmias

PRESENTATION

1% (10mg/mL):	2mL, 5mL, 10mL, 20mL ampoules
2% (20mg/mL):	2mL, 5mL, 10mL, 20mL ampoules
0.2% (2mg/mL):	500mL infusion bag

LOADING DOSE	**IV:** 50–100 mg
MAINTENANCE DOSE	**IV:** 4mg / minute for 30 minutes, then 2mg / minute for 2 hours, then 1mg / minute thereafter

RECONSTITUTION & ADMINISTRATION The 1% or 2% ampoules should be used, undiluted, to administer the loading dose as a slow IV injection over 2 minutes.

The 0.2% infusion bag, if available, is the preferred method of administering the maintenance infusion. This should be given at an initial rate of 120mL/hour for 30 minutes, then 60mL/hour for 2 hours, then 30mL/hour thereafter.

MONITORING ECG monitoring required

OTHER COMMENTS The loading dose may be repeated after 10 minutes if a maintenance infusion has not been started. Maximum loading dose is 300mg.

OMEPRAZOLE

INDICATION Clot stabilisation of major peptic ulcer bleeding **in patients who have undergone Oesophago-gastro-duodenoscopy (OGD)**

PRESENTATION 40mg vial

LOADING DOSE	**IV:** 80mg
MAINTENANCE DOSE	**IV:** 8mg / hour for 72 hours

RECONSTITUTION & ADMINISTRATION

Reconstitute each 40mg vial with 5mL of sodium chloride 0.9% or glucose 5%*

Give the loading dose as an IV bolus over 40–60 minutes.

For the maintenance infusion, the reconstituted 40mg vial should be added to a 100mL bag of sodium chloride 0.9% or glucose 5%*and administered at a rate of 20mL /hour.

See administration record overleaf.

OTHER COMMENTS

*Check product information for compatible fluids.

The use of omeprazole in this manner is unlicensed.

The Pennine Acute Hospitals NHS
NHS Trust

OMEPRAZOLE
Intravenous Infusion Administration Record
Day 1

It is mandatory to complete this section	
ALLERGY STATUS: Medicine / Substance	Reaction
Sign (NAME)	Date

First name:	Surname:	
Hospital No:	NHS No:	DOB:
Consultant: *Use addressograph label*	Ward:	Hosp:

LOADING DOSE: IV bolus over 40–60 minutes				ADMINISTRATION RECORD				
Date:	**Omeprazole 80mg**	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop

MAINTENANCE DOSE: 8mg/hour continuous infusion						ADMINISTRATION RECORD				
Date:	Day 1	**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:		**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:		**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:		**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:		**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop

* delete as appropriate - check product literature for compatibility information

WPH551

The Pennine Acute Hospitals NHS Trust

OMEPRAZOLE

Intravenous Infusion Administration Record cont'd

Day 2 onwards

First name:	Surname:	
Hospital No:	NHS No:	DOB:
Consultant: *Use addressograph label*	Ward:	Hosp:

Date	Day	MAINTENANCE DOSE: 8mg/hour continuous infusion	Rate	Doctor Sign and PRINT	Pharm	ADMINISTRATION RECORD: Batch	Start	Sign / Witness	Volume	Stop
Date:	Day 2	**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:		**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:		**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:		**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:		**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:	Day 3	**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:		**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:		**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:		**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* over 5 hours	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop
Date:		**Omeprazole 40mg** in 100ml Sodium Chloride 0.9%* or Glucose 5%* STOP AFTER 2 HOURS - 72 HOUR COURSE COMPLETE	Rate **20** mL/hour	Doctor Sign and PRINT	Pharm	Batch	Start	Sign Witness	Volume	Stop

* delete as appropriate - check product literature for compatibility information

WPH551

PHENYTOIN

INDICATION Status epilepticus

PRESENTATION IV: 250mg / 5mL ampoule
Oral: 25mg, 50mg, 100mg capsules, 30mg/5mL liquid

LOADING DOSE	**IV:** 20mg / kg*
MAINTENANCE DOSE	**IV / oral:** 100mg every 6–8 hours

**dose as per BNF 67 March –Sept 2014 – other references may quote lower doses of 15–18mg/kg*

RECONSTITUTION & ADMINISTRATION

Ampoules are ready diluted for IV use.

Give via a large peripheral vein or central line at a maximum rate of 50mg / minute.

If phenytoin is further diluted, the concentration should not exceed 10mg/mL, and the solution must be administered through a 0.22–0.5 micron filter. Sodium chloride 0.9% is a suitable diluent.

The line should be flushed well with sodium chloride 0.9% before and after each dose of phenytoin to avoid local venous irritation.

MONITORING

ECG, blood pressure and respiratory monitoring required.

The therapeutic range is 8–15 mg/L. Levels should be taken 6–24 hours after the loading dose, as a guide to whether therapeutic range has been achieved.

Levels should be repeated as guided by clinical condition. This may be more often in patients with poor seizure control, liver impairment, suspected toxicity, or when interacting drugs are co-prescribed.

OTHER COMMENTS

Phenytoin tends to precipitate an hour after dilution. Therefore, if diluting the phenytoin, the full dose must be administered within an hour of preparation.

Signs of phenytoin toxicity include ataxia, lethargy, slurred speech, nausea and vomiting.

TIROFIBAN

INDICATION Prevention of early myocardial infarction in patients with unstable angina or NSTEMI

PRESENTATION **Concentrate:** 12.5mg / 50mL vial
Infusion bag: 50micrograms/mL (250mL bag)

LOADING DOSE	**IV:** 400 nanograms / kg / minute for 30 minutes
MAINTENANCE DOSE	**IV:** 100 nanograms / kg / minute for at least 48 hours

RECONSTITUTION & ADMINISTRATION

The concentrate should be reconstituted as follows: withdraw 50mL of sodium chloride 0.9% or glucose 5% infusion fluid from a 250mL bag and replace with the 50mL concentrate to give a final concentration of 50micrograms/mL. Mix well before use.

The 50microgram/mL solution, made from concentrate or by using the pre-mixed infusion bag, should be infused at an initial rate of 0.48mL/kg/hour for 30 minutes.

The infusion rate should then be reduced to 0.12mL/kg/hour for at least 48 hours.

MONITORING Platelet count, haemoglobin and haematocrit levels should be checked at baseline, within 2–6 hours after start of therapy, and at least once daily thereafter while on therapy.

OTHER COMMENTS In patients with renal impairment (creatinine clearance <30 mL/min), the above doses should be reduced by half.

TRANEXAMIC ACID

INDICATION Reduction of mortality associated with bleeding after major trauma **[unlicensed use]**

PRESENTATION 500mg / 5mL ampoule

LOADING DOSE	**IV:** 1 gram
MAINTENANCE DOSE	**IV:** 1 gram over 8 hours

RECONSTITUTION & ADMINISTRATION

The loading dose should be administered as a bolus injection over 10 minutes.

The maintenance infusion should be made up by adding 1 gram of tranexamic acid to a 100mL bag of sodium chloride 0.9% or glucose 5% and administered at a rate of 14mL/hour

OTHER COMMENTS

Rapid intravenous injection may cause dizziness and/or hypotension.

Tranexamic acid should ideally be started within 1 hour of injury. It should not be administered more than 3 hours after injury as this has not been found to be beneficial, and may even be harmful.

Contraindicated in history of thromboembolic disease or pregnancy.

Do not infuse with other medicines or blood transfusions.

6. Implementation

6.1 Dissemination

This document will be uploaded onto the Trust's Intranet Site via the Document Management System – all staff will use this resource to access policies and guidelines. Notification of upload will be added to the Trust's weekly bulletin. Notification of new guidelines will take place through meetings within the Directorate e.g., governance, site meetings, management meetings and ward managers' meetings.

6.2 Training Arrangements

As per section 4, all divisional nurse managers and ward/departmental managers are responsible for ensuring that relevant staff are familiar with the content of this policy, and ensure that relevant training is made available as necessary.

6.3 Financial Impact

There is no financial impact with this policy, as all the drugs listed are currently used within the Trust.

7. Monitoring Arrangements

7.1 See Appendix 1

8. Review Arrangements

8.1 The document will be reviewed every 3 years by the 'Medicine Pharmacists Group'. If amendments are required before this time, it will be highlighted by the Medicine and Community Services Drug and Therapeutics Committee.

9. References and Bibliography

9.1 Associated Documents

- Trust Induction and Mandatory Training Policy (EDH024)
- Medicines Policy (EDC018)
- Intravenous Potassium Policy (EDT003)
- Policy for the Authorisation and Training Requirements for Staff Administering Categories of Injectable Pharmaceutical Products (CPDI082)
- Standard operational procedures for the insertion, management and removal of intravascular devices and Standard operational procedures for the preparation and administration of injectable pharmaceutical products (CPDI083)

- Policy for the Aseptic Preparation of Pharmaceutical Products in Clinical Areas (CPDI081)
- Antibiotic Policy for Adult Patients (EDT007)
- Stroke Thrombolysis Assessment Policy (CPME082)
- Policy for Training in Safe Administration of Medicines (EDN031)
- Procedure for Administration of Prescribed Medicines to Inpatients (EDT004)
- Accident & Incident Reporting Policy (EDQ008).

9.2 Supporting References

- British National Formulary 67 March 2014
- CRASH-2 Trial Collaborators. Effects of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant haemorrhage (CRASH-2): a randomised, placebo-controlled trial. *The Lancet* 2010; **376**: 23-32
- Martindale – The Complete Drug Reference (accessed via www.medicinescomplete.com May 2014)
- Medusa Injectable Medicines Guide (accessed via http://medusa.wales.nhs.uk May 2014)
- Summary of Product Characteristics (accessed via www.medicines.org.uk/emc):
  - Actilyse (alteplase). Boehringer Ingelheim Ltd 08/2013
  - Aggrastat (tirofiban). Iroko Cardio GmbH 08/01/14
  - Aminophylline injection BP. Hameln Pharmaceuticals 06/07/10
  - Apresoline (hydralazine). Sovereign Medical 13/12/13
  - Cordarone X (amiodarone). Sanofi-Aventis 30/04/14
  - Cyklokapron injection (tranexamic acid). Pharmacia Ltd 11/2012
  - Epanutin (phenytoin). Pfizer 01/06/10
  - Integrilin (eptifibatide). GlaxoSmithKline UK 18/03/13
  - Lanoxin (digoxin). Aspen 11/03/14
  - Reopro (abciximab). Eli Lilly and Co Ltd 25/09/13
  - Tambocor (flecainide). Meda Pharmaceuticals 15/01/14
- Summary of Product Characteristics Fomepizole Injection XGen Pharmaceuticals Inc October 2007
- UCL Hospitals Injectable Medicines Administration Guide 3rd ed. Wiley-Blackwell 2010
- NHS Litigation Authority (2011) Risk Management Standards for NHS Trusts providing Acute, Community, or Mental Health & Learning Disability Services & Independent Sector Providers of NHS Care 2011/12. Version 1

Jan 2011 NHSLA.

9.3 Bibliography

- National Patient Safety Agency (NPSA). Rapid Response Report: Preventing fatalities from medication loading doses. Nov 2010. NPSA/2010/RRR018.
- National Patient Safety Agency (NPSA). Rapid Response Report: Preventing fatalities from medication loading doses, supporting information. Nov 2010. NPSA/2010/RRR018.
- UK Medicines Information (UKMi). NPSA Rapid Response Report: Preventing fatalities from medication loading doses - A risk assessment tool to support local implementation. National Electronic Library for Medicines (NeLM), 2011

10. Abbreviations

ACT	Activated Clotting Time
APTT	Activated Partial Thromboplastin Time
BNF	British National Formulary
˚C	Degrees Celsius
CVA	Cardiovascular Accident
DOB	Date of Birth
ECG	Electrocardiogram
eMC	Electronic Medicines Compendium
g	Gram
hr	Hour
IV	Intravenous
Kg	Kilogram
L	Litre
lb	pound
LFT	Liver function tests
mg	Milligram
MI	Myocardial infarction
mL	Millilitre
NPSA	National Patient Safety Agency
NSTEMI	Non-ST elevation myocardial infarction
PADAT	Pennine Acute Drug and Therapeutics Committee

PCI	Percutaneous coronary intervention
PE	Pulmonary Embolism
PT	Prothrombin Time
TDM	Therapeutic drug monitoring
TFT	Thyroid function tests
µm	micrometre
WFI	Water for Injection
>	Greater than
≥	Greater than or equal to
<	less than

Appendix 1 - Arrangements for Monitoring Compliance with this document

The practice within this policy links into the NHS Litigation Authority's Risk Management Standard 4 Criterion 5 'Medicines Management' please refer to the Trust's Medicines Policy (EDC018) for more information. In addition, the specific arrangements for monitoring compliance of this document are summarised in the following table:

Standard/ Criterion	Minimum requirement to be monitored	Process for Monitoring	Responsible Individual/ Group/ Committee for Monitoring	Frequency of Monitoring	Responsible Individual/ Group/ Committee for Review of Results	Responsible Individual/ Group/ Committee for Development of Action Plan	Responsible Individual/ Group/ Committee for Monitoring of Action Plan
Prescribing of loading dose and subsequent maintenance doses are correct	Compliance with the policy	Review of clinical incident forms	Ward / unit managers Clinical leads	Monthly	Medication safety group PADAT	Loading Doses Task and Finish Group for Medicine	Medical and Community Services Drug and Therapeutics Committee
Administration of loading dose and subsequent maintenance doses are correct	Compliance with the policy	Review of clinical incident forms	Ward / unit managers Clinical leads	Monthly	Medication safety group PADAT	Loading Doses Task and Finish Group for Medicine	Medical and Community Services Drug and Therapeutics Committee
Staff are fully trained in using the policy	Competency status of staff	Analysis of training / competency records	Ward / unit managers Clinical leads Practice educator	Initially 6 months after implementation of the policy, then annually.	Ward / unit managers Practice educator	Ward / unit managers Practice educator	Medical and Community Services Drug and Therapeutics Committee

Appendix 2 – Equality Impact Assessment

The Pennine Acute Hospitals NHS Trust

Part One

Name of Policy	Adult Loading Doses Policy	Date of assessment	24/07/2014	Is the policy new or for review?	New
Area	Medicine	Name of Author(s)	Loading Doses Task and Finish Group for Medicine		
1.1 Briefly describe the aims and objectives and the purpose of the policy		To reduce the risks associated with the prescribing and administration of loading doses and subsequent maintenance doses.			
1.2 Are there any associated objectives or directives of the policy? i.e. Care Quality Commission (CQC), NHS Litigation Authority (NHSLA)					
1.3 Who is the policy intended to benefit, and what are the expected outcomes?		Patients: by promoting safe, appropriate prescribing and administration of medicines, and reducing errors associated with loading doses. Medical and nursing staff: by providing additional information on how to prescribe, prepare and administer medication loading doses			
1.4 What factors could influence the intended outcomes either positively or negatively?					
1.5 Who are the main stakeholders in relation to the policy		**Staff** **Service Users**			
1.6 Who implements and is responsible for the policy?		Medical and Community Services Drug and Therapeutics Committee			

Part One (cont)

For each of the nine Equality Categories ask the question below:	Human Rights	Age	Disability	Ethnicity (Race)	Religion	Gender	Sexual orientation	Carers	Social Deprivation
1.7 From the evidence, does the policy affect or have the potential to affect individuals or communities differently or disproportionately, either positively or negatively (including discrimination)?	No	No	No	No	No	No	No	No	No
1.8 Is there potential for, or evidence that, the proposed policy will promote equality of opportunity for all and promote good relations with different groups?	No	No	No	No	No	No	No	No	No
1.9 Is there public concern (including media, academic, voluntary or sector specific interest) in the policy area about actual, perceived or potential discrimination about a particular community?	No	No	No	No	No	No	No	No	No
1.10 Is there any doubt about answers to any of the questions?	No	No	No	No	No	No	No	No	No

Part Two

2.1	In what way does the policy impact on any particular group listed above? Include here what evidence you have collated, whether there are any gaps and what further information is required. **N/A**
2.2	Adverse Impact - if you have identified potential or real direct or indirect discrimination? If so, can it be justified (e.g., legislation, clinical or social evidence)? **N/A**
2.3	Positive Impact - does the policy actively promote equality of opportunity and/or good relations between different groups of people? **N/A**

Part Three

Policy Title: Adult Loading Doses Policy		**Policy Number:** EDT017
Ratifying Committee: Pennine Acute Drug and Therapeutics Committee		**Date sent to Committee:** August 2014
This policy has been assessed as having no or low equality impact. Part 1 is completed.		**Yes**
This policy has been assessed as having low to medium impact. Parts 1 and 2 have been completed. Full impact assessment is unnecessary.		
This policy has been assessed as having medium to high impact. Parts 1 and 2 have been completed. Full impact assessment is necessary.		
Assessors Name Diane Elford	**Designation** Lead clinical Pharmacist -Medicine	**Signed***
Equality Champion **Louise Williams**	**Directorate** **- Medicine**	**Signed***
Date:		**Please scan or insert electronic signature**