M69

Code A - PA (Nursing & Clinical Governance)

From: Watling, Jeff [Code A

Sent: 14 January 2004 18:36

To: Allen Nick 2003; Bagshaw Hazel 2003; Cameron Fiona; Dalby Ann; Davy Nikki 2003; Fellows Elizabeth 2003; Helen McHale; Holden Andrew (J82098) SWAN SURGERY GU32 3AB; Hovenden Katie 2003; Ian Reid; Jane Marshall; Lewkowicz Nicholas (J82154) FAREHAM HEALTH CENTRE PO16 7ER; Paula Diaper; Peach Jan (J82006) GOSPORT HEALTH CENTRE PO12 3PN

Subject: PRINTED AND PUT IN BUFF FILE - Agenda papers for next Tuesday

Please see attached agenda papers for the meeting to be held at Fareham Reach at 12.30pm on Tuesday 20th January. I look forward to seeing you there.

<<Notes November 2003.doc>> <<AGENDA January 2004.doc>> <<medication History Taking Guideline Nov 2003.doc>> <<Form PHPS 07001U version 3 medication history taking Nov 2003.doc>> <<Antibiotic prophylaxis summary Nov 2003.doc>> <<Antibiotic prophylaxis tables Nov 2003.doc>> <<Form PHPS 07001U version 3 antibiotic prophylaxis and Surgery Nov 2003.doc>> <<Vaginal Infections Nov 2003.doc>> <<Form PHPS 07001U version 3 vaginal infections Nov 2003.doc>> <<Calculation of Drug Dose Jan 2004.doc>> <<Blank PHPS 07001U calculations of drug doses Jan 2004.doc>> <<IV Omeprazole new version Jan 2004.doc>> <<IV omeprazole form for recording guideline Jan 2004.doc>> <<Treatment of community acquired pneumonia Jan 2004.doc>> <<Blank PHPS 07001U community acquired pneumonia Jan 2004.doc>> <<Syringe Mixing of Analgesics Antiemetics Jan 2004.doc>> <<Blank PHPS 07001U compatibility of im analgesics and other drugs in the same syringe Jan 2004.doc>> <<magnesium sulphate admin guidelines Jan 2004.doc>>

Jeff
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M69

East Hants PCT
Fareham and Gosport PCT
Portsmouth City PCT
Portsmouth Hospitals NHS Trust
Royal Hospital, Haslar
Portsmouth & SE Hampshire LM Committee
West Hampshire NHS Trust

Guidelines and Medicines Management Subcommittee

Fareham and Gosport PCT, Fareham Reach, Gosport Road Fareham, PO3 6AD.
12.30 to 2.00pm Tuesday 20th January 2004

AGENDA

1.04.1 Apologies for absence

1.04.2 Notes of meeting 13th November 2003 (attached)

1.04.3 Matters arising

1.04.4 Guidelines previously circulated

a. Medication history taking (attached)

b. Antibiotic prophylaxis in surgery (attached)

c. Vaginal infections (attached)

1.04.5 New Guidelines for discussion

a. Calculation of Drug Doses (attached)

b. Omeprazole Intravenous Infusion for Bleeding Ulcers (attached)

c. Pneumonia, Community Acquired (attached)

d. Compatibility of intramuscular analgesics and other drugs in the same syringe (attached)

e. Magnesium Sulphate Intravenous Infusion in Asthma (attached)

1.04.6 Any other business

1.04.7 Dates for next meetings

15th March, 14th June, 27th September, 6th December. Please confirm availability for the above

East Hants PCT
Fareham and Gosport PCT
Portsmouth City PCT
Portsmouth Hospitals NHS Trust
Royal Hospital, Haslar
Portsmouth & SE Hampshire LM Committee
West Hampshire NHS Trust

Notes of Guidelines and Medicines Management Subcommittee Monday 17th November 2003

2.03.1 Present

Mrs P Diaper, Mrs J Marshall, Mrs S Halewood, Dr N Leukowicz, Dr I Reid (chairman) Ms A Dalby, Dr N Allen, Mrs K Hovenden, Mrs H Bagshaw, Mrs J Brember, Miss H McHale, Mrs N Davy, Mr J Watling.

Apologies for absence

Dr E Fellows.

2.03.2 Notes of meeting 13th May 2003

Accepted as a correct record

2.03.3 Matters arising

1.03.4 Update on proposed route for approval of Drug Therapy Guidelines

The paper "Accountability Framework for Medicines Management within the local Health Economy" was discussed and proposed revised accountability framework was noted. The Clinical Effectiveness and Prescribing Committee does not yet exist. It was proposed that a structure should be developed to focus on medicines management but with ability to extend to a wider agenda. The Guidelines and Medicines Management Committee would concentrate on Medicines Policy, Drug Therapy Guidelines and Patient Group Directions. Each guideline/document would have to go to each PCT for final ratification. . The potential to widen the terms of reference of the Committee was discussed but it was agreed that these should be "allowed to develop over time." Agreed Chairman to write to Graeme Zaki to request clinical and nursing representation from PHT. Each PCT to be invited to send, as a minimum, a clinical, nursing and pharmacy representative.

2.03.4 New Guidelines for discussion

a. Guidelines on Management of Acute Confusion and Aggression for use in the Department of Elderly Medicine

This guideline was discussed in the context of Elderly Medicine and Elderly Mental Health Departments. It was noted that nursing representatives from PHT and elsewhere were concerned about the deliverability of one-to-one monitoring of patients undergoing rapid tranquillisation. This was not thought to be an issue with regard to the approval of guidelines for elderly patients in PCT managed beds. Agreed that the guidelines would be approved for elderly care wards on the QAH/SMH sites. Ann Dalby to take to the community hospitals' nursing reference

group. Paula Diaper to take to EMH Clinicians to ensure their agreement to the guidelines. If no reconciliation can be found brief modifications for PHT etc to be added to the Elderly Medicine Guideline to ensure universal acceptance. Agreed also to move and cross reference flow diagram within document.

Post meeting note

At a GWMH CHI Action Plan update meeting following on from the Guidelines and Medicines Management Committee it was agreed that this guideline or a revised version must be put in shape to be applied to GWMH wards, preferably within the next two weeks but definitely by 10th December.

b. Subcutaneous Fluid Replacement

This was introduced as a re-formating of an existing guideline. Agreed that the wording concerning addition of potassium chloride should be amended. Also agreed to review and include audit methodology (see post meeting note above).

c. Clopidogrel

This guideline had previously been requested and approved by the Area Prescribing Committee and was approved unchanged.

2.03.5 Drug Therapy Guidelines from Local NHS Trusts.

There was a brief discussion concerning the use of externally produced guidelines, which were evidence based and produced by a Royal College or academic institution. Agreed generally acceptable but they may have to be "badged" for local use with a clear reference to the originator.

a. Guidelines for Management of Depression in Adults and Elderly (West Hampshire NHS Trust).

This guideline had previously been approved by the Area Prescribing Committee and was approved unchanged.

b. Wessex Palliative Care Guidelines

It was agreed that there were good practical reasons for adopting the use of the Wessex Guidelines for palliative care patients, pending the production of any local guidelines if required. Agreed that these guidelines should be adopted unchanged.

2.03.6 Priority for New Guidelines/Guideline Review – what exactly is the requirement?

A request was made for clarity with regard to requirements for future guidelines in relation to the GWMH CHI recommendations. The following action was agreed:

Sedation in the elderly

This had been largely achieved through the Guidelines on Management of Acute Confusion and Aggression for use in the Department of Elderly Medicine. Agreed to discuss the issue with EMH with a view to producing a guideline for more modest, sedation in elderly patients, potentially identifying where greater standardisation of medication could take place.

Pain control in the elderly

The recently produced Joint PCTs Pain Control Guidelines for Elderly Patients to be re-formated to comply with current requirements and a review carried out to ensure an evidence base.

2.03.7 Review of Medicines Policy – discussion concerning review following issue of new policy.

It was reported that the new Medicines Policy was in the final stages of modification following the latest round of consultation. Would be produced in final form within the next week or two and e-mailed to members. In the absence of further comment it would be approved by Chairman's action. A request was made to include mention of who prepared, and approved the document and who should receive comments for improvement of the Medicines Policy.

2.03.8 Any other business

a. Use of syringe drivers.

An email from Jacquie Swanston (Rowans Hospice) was discussed. Agreed that syringe driver policy should be reviewed to take account of the points Jacquie raised then shared across the health economy and The Rowans consulted with a view to incorporating any agreed amendments.

b. Nurse Prescribing within PCTs

The Committee noted that a Nurse Prescribing Policy for PCTs had been produced. This would be approved by Chairman's action in a similar way to the Medicines Policy.

c. Draft Guidelines

The following draft guidelines, which are on the agenda of the Formulary and Medicines Group were circulated for review prior to the next meeting:

- Medication history taking
- Antibiotic prophylaxis in surgery
- Vaginal infections

It was agreed that all drug therapy guidelines should be approved by this committee, prior to final ratification.

2.03.9 Date for next meeting.

12.30pm Tuesday 20th January 2004 Fareham Reach

Proposed additional dates all 12.30pm. 15th March, 14th June, 27th September, 6th December. Members are asked to confirm availability for the above.

Medication History Taking (Draft)

Introduction

There are numerous potent drugs available which can profoundly influence the outcome of diseases. Drugs may produce clinical features, which closely resemble naturally occurring disorders and even obscure the correct diagnosis. Therefore it is important an accurate drug history is taken.

The objectives of this guideline are to ensure that an accurate drug history is taken in order to minimise risk to patients from essential drugs being omitted; incorrect doses and drugs being prescribed.

This guideline should apply to all patients admitted to Portsmouth Hospitals NHS Trust.

Recommendations

The following should be obtained whenever a mediation history is taken:

- **Bold type** indicates an essential record
- *Italic type* indicates that the information is desirable but may be more difficult to ascertain

Current prescription, non-prescription and 'over the counter' or purchased medicines, herbal and complementary medicines taken

Information to be obtained for each drug or product	**Notes for History Taking**
Name and Description	Take care to identify modified release preparations. Drugs should be prescribed by generic name, but also recording the trade name may aid in identification of the correct preparation.
Strength	Beware drugs with more than one strength. Take care with products containing combinations of drugs e.g. Co-Tenidone 2.5/25.
Dose and frequency of dosage	The times of day should be recorded.
Formulation	
Indication	
Date medication started	
Outcome of therapy	
compliance	

Helen McHale, Guidelines Pharmacist manages this guideline (ext 6636)
See Trust Policy for the Production of Drug Therapy Guidelines
Approved by: Date
Ratified by: Date
Review date:

Relevant Past Medication History
The same details as for the current medicines should be obtained for medication usage that is relevant to the current clinical problem.
e.g. Drugs tried and failed.
Antidepressants recently stopped.
Timing of previous courses of steroids.

Allergies, Sensitivities and Adverse Drug Reactions
These details should also be recorded in the appropriate section of the drug chart.
If there are no known allergies, state: None.
If the information cannot be obtained, state: Unobtainable.

Information to be obtained for each drug or product	Notes for allergy taking
Name and description	Description of allergy or reaction

Where to Obtain Information From

Source of Information	Notes on sources of information
Patient	Patients may know all of their drugs off the top of their head. The patient may have a list with them e.g. repeat prescription.
Patients own drugs (PODs)	Check dates on the PODs to get an idea of whether the patient is still taking them and question the patient on this. Drug histories can be more accurate if the names and strengths are confirmed by examining the medication labels.
Relatives/ carers	They may have a list.
GP	The GP may have sent a letter into the hospital stating the drug history, (caution sometimes doses may be missing). You may need to phone the surgery and ask for the history, remember to ask when the drug was last prescribed as well as above information.
Nursing Homes	Usually keep records of medications their patients are taking.
Community Pharmacy	Might be useful if patients are taking methadone or have medicines in a monitored dosage system. They also keep electronic records

Smoking and Alcohol Consumption

Both of these can interact with drugs that may be prescribed in hospital

e.g. smoking can increase clearance of aminophylline.
chronic alcohol consumption can induce enzymes possibly increasing clearance of some drugs.

References to national Guidelines

Spoonful of Sugar
Building a Safer NHS for Patients

Evidence base

While there is no evidence to state the best way of obtaining a drug history there is evidence in the form of small studies to suggest that inaccurate drug histories can adversely affect patient outcomes. These studies have given standards/ guidelines that could be included in drug histories, which have been incorporated into this guideline.

Appendix 2. PHPS Form 07 001U Documentation of Preparation, Approval, Publishing, Audit and Review of Drug Therapy Guidelines

Record of Preparation, Publishing, Audit and Review of Drug Therapy Guidelines

Preparation

Title of Drug Therapy Guideline	Medication History Taking
Name of Guideline Project Manager	Helen McHale

Membership of Guideline Development Group	**Date**
1Helen McHale	August 2003
2Michelle Small	September 2003
3Medical Admissions Consultants were asked to review the guideline and make any comments	October 2003
4Medical Admissions Pharmacists were asked to review the guideline and make any comments	October 2003
5Senior Medical Admissions Nurses were asked to review the guideline and make any comments	October 2003
6 A patient	
7	
8	

Methods used to formulate recommendations
Searches using medline, The Pharmaceutical Journals search engine and Google were made. Literature was reviewed and while there was no evidence to state the best way of obtaining a drug history, standards and guidelines were included. Points considered to be 'good practice' in other guidelines were included in the Portsmouth Hospitals NHS Trust guideline. The guideline was viewed by lead MAU Consultants, Nurses and Pharmacists and input encouraged by a set deadline. Lack of input was taken to mean that the relevant parties were satisfied with the guideline.

Documentation of Review Process		
Reviewing groups		**Date**
Initial proposal	Guideline Development Group	August 2003
Draft 2	Reviewed by Michelle Small,	September 2003
Draft 3	Reviewed by MAU Consultants and Nurses	October 2003
Draft 4		
Finalisation by Guideline Development Group		November 2003

Documentation of Minimum Requirements (state reasons for exclusion and enter the information if it is not included for any other reason than it is not applicable in the boxes below)	
Requirement	**Inc**
Reasons for developing drug therapy guideline	☒
Objectives of drug therapy guideline	☒
A description of patients to whom the guideline should apply (not ageist)	☒
A clear description of condition to be detected, treated or prevented Not applicable	☐
Clear description of health benefits likely to be gained from following the guidelines	☒
Clear definition of alternative options for management of the condition Not applicable	☐
Statement of how the guideline to be disseminated Conciseness. Guideline to be published on the Trust intranet and possibly a paper version distributed to the wards and Doctors.	☐
Clear presentation of the recommendations	☒
An adequate description of harms and risks associated with recommended management Not applicable	☐
Reference to key national guidelines	☒
Comment concerning evidence base	☒

Documentation of Additional Information	
Requirement	**Inc**
Estimated costs of expenditures likely to occur from the recommended management	☐
Explicit statement of how patient preferences should be taken into account in applying the guidelines	☐
Clear definition of standards or targets or measurable outcomes, that can be monitored	☐

References Used in Preparing Drug Therapy Guideline
Dodds L, An objective assessment of the role of the pharmacist in medication and compliance history taking. British Journal of pharmaceutical Practice. 1982, 12. Titcomb L. The pharmacist's role in drug history taking. British Journal of Pharmaceutical Practice. 1989, 186. Hocking G, De mello W. Taking a 'drugs' History. Anaesthesia. 1997, 52, (9), 904-905 Stockley I, Drug Interactions. 5th ed. Pharmaceutical Press. 1999.

Methods Used to Interpret Strength of Evidence

While there is no evidence to state the best way of obtaining a drug history there is evidence in the form of small studies to suggest that inaccurate drug histories can adversely affect patient out comes. These studies have given standards/ guidelines that could be included in drug histories, which have been incorporated into this guideline.

Approval

Documentation of Approval Process	
Group	**Date**
Approval by Formulary and Medicines Group	
Approval by Guidelines and Medicines Management Committee	
Approval by Area Prescribing Committee	
Approval by sub-committee of Clinical Governance Committee	

Publishing and Dissemination

Final version Prepared by;		**Date**
Final version placed on intranet website by		**Date**
Intranet address		
Alternative publication methods		

Documentation of Pilot Process (If applicable)	
Pilot Process	**Duration**
Not applicable	
Audit of Pilot Process	
Not applicable	
Changes made due to results of pilot process Not applicable	

Review

Review Date Proposed by Guideline Development Group		**Date** November 2005
Proposed review methodology		
Review date and method agreed by relevant approval committee?	**Yes**☐	**No**☐
Revised and approved review date or method		
Review completed by		**Date**

Revised version prepared by	**Date**
Revised version placed on intranet website by	**Date**
Intranet address	

Detailed documentation of review of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWIYY

Audit

Audit date proposed by Guideline Development Group	**Date**	
Proposed audit methodology		
Audit date and method approved by relevant approval committee?	**Yes** ☐	**No** ☐
Revised and approved audit date or method		
Audit completed	**Date**	
Results reported by		
Results reported to		
Changes to guideline required?	**Yes** ☐	**No** ☐
Revised version prepared by	**Date**	
Revised version placed on intranet website by	**Date**	
Intranet address		

Detailed documentation of audits of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWI07 001U

ANTIBIOTIC PROPHYLAXIS IN SURGERY

Introduction

Infection of incised skin or soft tissue is a common but avoidable complication in surgery. Prophylactic antibiotics inhibit the growth of contaminating bacteria reducing the risk of infection but their administration can also increase the risk of antibiotic resistant bacteria and Clostridium difficile.

The objectives of this guideline are to:

- Decrease the incidence of surgical site infection
- Use antibiotics in a manner supported by evidence of effectiveness.
- Minimise the effect of antibiotics on patients natural flora.
- Minimise adverse effects.

This guideline applies to all adult patients undergoing the defined surgical procedures

Summary of recommendations

- The antibiotics selected for prophylaxis must cover the common pathogens.
- Prophylactic antibiotics should be administered intravenously.
- Antibiotic prophylaxis should be administered immediately before or during a procedure.
- Antibiotic prophylaxis should be confined to the perioperative period.
- The single dose of antibiotic for prophylactic use is, in most circumstances, the same as would be used therapeutically.
- Patients with a history of anaphylaxis or urticaria or rash occurring immediately after penicillin therapy are at increased risk of immediate hypersensitivity to penicillins and should not receive prophylaxis with a beta-lactam antibiotic (such as a penicillin or cephalosporin).
- Patients with a history of allergy to a penicillin without a history of immediate hypersensitivity may be prescribed a cephalosporin.
- Policies for surgical prophylaxis that recommend beta-lactam antibiotics as first line agents should also recommend an alternative for patients with allergy to penicillins or cephalosporins.
- An additional dose of prophylactic agent is not indicated in adults, unless there is blood loss of up to 1500 ml during surgery or haemodilution of up to 15 ml/kg.
- Fluid replacement bags should not be primed with prophylactic antibiotics because of the potential risk of contamination and calculation errors.

CLASSIFICATION OF OPERATION

Clean Operations in which no inflammation is encountered and the respiratory, alimentary or genitourinary tracts are not entered. There is no break in aseptic operating theatre technique.

Clean-contaminated Operations in which the respiratory, alimentary or genitourinary tracts are entered but without significant spillage.

Contaminated Operations where acute inflammation (without pus) is encountered, or where there is visible contamination of the wound. Examples include gross spillage from a hollow viscus during the operation or compound/open injuries operated on within four hours.

Dirty Operations in the presence of pus, where there is a previously perforated hollow viscus, or compound/open injuries more than four hours old.

Antibiotic prophylaxis is recommended in:

CARDIOTHORACIC SURGERY

- Cardiac pacemaker insertion

ENT SURGERY

- Head and neck surgery (clean-contaminated/contaminated)

GENERAL SURGERY

- Colorectal surgery
- Appendicectomy
- Biliary surgery (open)
- Breast surgery
- Clean-contaminated procedures (extrapolated from specific clean-contaminated procedures)
- Endoscopic gastrostomy
- Gastroduodenal surgery
- Oesophageal surgery
- Small bowel surgery
- Laparoscopic or non-laparoscopic hernia repair with mesh

OBSTETRICS & GYNAECOLOGY

- Caesarean section
- Hysterectomy (abdominal or vaginal)
- Induced abortion

OPHTHALMOLOGY

- Cataract surgery

ORTHOPAEDIC SURGERY

- Total hip replacement
- Prosthetic knee joint replacement
- Closed fracture fixation
- Hip fracture repair
- Spinal surgery
- Insertion of prosthetic device (extrapolated from trials of specific devices)

UROLOGY

- Transrectal prostate biopsy
- Shock-wave lithotripsy
- Transurethral resection of the prostate

VASCULAR SURGERY

- Lower limb amputation
- Vascular surgery (abdominal and lower limb)

Antibiotic prophylaxis is NOT recommended in:

ENT SURGERY
Ear surgery (clean)
Head and neck surgery (clean)
Nose or sinus surgery
Tonsillectomy

GENERAL SURGERY
Laparoscopic hernia or non-laparoscopic hernia surgery without a mesh
Laparoscopic cholecystectomy

ORTHOPAEDIC SURGERY
Orthopaedic surgery without prosthetic device (elective)

UROLOGY
Transurethral resection of bladder tumours

Portsmouth Hospitals will not support the use of prophylaxis where SIGN does not recommend it.

Key National Refences
Scottish Intercollegiate Guidelines Network. Antibiotic Prophylaxis in Surgery. July 2000.
Available on the SIGN website: www.sign.ac.uk

Evidence Base
This guidance is based upon the SIGN guidelines published in 2000. The SIGN document summarises the relevant evidence and makes recommendations on which types of surgery benefit from prophylaxis and those which do not. It is the intention that Portsmouth Hospitals follows this guidance closely. It is recommended that all surgeons read the sections that apply to their surgery.

Dr R Brindle, Consultant Microbiologist manages this guideline (ext 3204)
See Trust Policy for the Production of Drug Therapy Guidelines
Approved by: Date
Ratified by: Date
Review date

ANTIBIOTIC PROPHYLAXIS IN SURGERY

Tables

1. The primary antibiotic should be given to all patients except those who give a history of allergy to a penicillin.
2. The secondary antibiotic should be given to those who have a history of allergy to penicillin without a history of immediate hypersensitivity.
3. The tertiary antibiotic should be given to those who have a history of immediate hypersensitivity to beta-lactam (either a cephalosporin or penicillin).

The tertiary antibiotic may also be given to patients who have evidence of infection with bacteria which are resistant to the primary and secondary antibiotics. Those patients known to have MRSA infections or to be MRSA colonised might need to receive teicoplanin with or instead of the listed antibiotics.

Surgical procedures

	Primary Antibiotics	Dose	Secondary Antibiotics	Dose	Tertiary Antibiotics	Dose
CARDIOTHORACIC SURGERY						
Cardiac pacemaker insertion	Flucloxacillin	1 g	Cefuroxime	1.5 g	Teicoplanin	400 mg
ENT SURGERY						
Head and neck surgery (clean-contaminated/contaminated)	Co-amoxiclav	1.2 g	Cefuroxime + Metronidazole	1.5 g 500 mg	Clindamycin	600 mg

	Primary Antibiotics	Dose	Secondary Antibiotics	Dose	Tertiary Antibiotics	Dose
GENERAL SURGERY						
Colorectal surgery	Co-amoxiclav	1.2 g	Cefuroxime + Metronidazole	1.5 g 500 mg	Gentamicin + Metronidazole	2 mg/kg 500 mg
Appendicectomy	Co-amoxiclav	1.2 g	Cefuroxime + Metronidazole	1.5 g 500 mg	Gentamicin + Metronidazole	2 mg/kg 500 mg
Biliary surgery (open)	Co-amoxiclav	1.2 g	Cefuroxime	1.5 g	Gentamicin	2 mg/kg
Breast surgery	Flucloxacillin	1 g	Cefuroxime	1.5 g	Clindamycin	600 mg
Clean-contaminated procedures	Co-amoxiclav	1.2 g	Cefuroxime + Metronidazole	1.5 g 500 mg	Gentamicin + Metronidazole	2 mg/kg 500 mg
Endoscopic gastrostomy	Co-amoxiclav	1.2 g	Cefuroxime + Metronidazole	1.5 g 500 mg	Gentamicin	2 mg/kg
Gastroduodenal surgery	Co-amoxiclav	1.2 g	Cefuroxime + Metronidazole	1.5 g 500 mg	Gentamicin	2 mg/kg
Oesophageal surgery	Co-amoxiclav	1.2 g	Cefuroxime + metronidazole	1.5 g 500 mg	Gentamicin	2 mg/kg
Small bowel surgery	Co-amoxiclav	1.2 g	Cefuroxime + Metronidazole	1.5 g 500 mg	Gentamicin + Metronidazole	2mg/kg 500mg
Laparoscopic or non-laparoscopic hernia repair with mesh	Flucloxacillin	1 g	Cefuroxime	1.5 g	Teicoplanin	400 mg

	Primary Antibiotics	Dose	Secondary Antibiotics	Dose	Tertiary Antibiotics	Dose
VASCULAR SURGERY						
Lower limb amputation	Flucloxacillin	1 g	Cefuroxime	1.5 g	Clindamycin	600 mg
Vascular surgery (abdominal and lower limb)	Flucloxacillin	1 g	Cefuroxime	1.5 g	Clindamycin	600 mg

	Primary Antibiotics	Dose	Secondary Antibiotics	Dose	Tertiary Antibiotics	Dose
OBSTETRICS & GYNAECOLOGY						
Caesarean section	Co-amoxiclav	1.2 g	Cefuroxime Metronidazole	1.5 g 500 mg	Gentamicin Metronidazole	2 mg/kg 500 mg
Hysterectomy (abdominal or vaginal)	Co-amoxiclav	1.2 g	Cefuroxime Metronidazole	1.5 g 500 mg	Gentamicin Metronidazole	2 mg/kg 500 mg
Induced abortion (vacuum)*	None					
Induced abortion (late)*	Co-amoxiclav	1.2 g	Cefuroxime Metronidazole	1.5 g 500 mg	Gentamicin Metronidazole	2 mg/kg 500 mg
OPHTHALMOLOGY						
Cataract surgery http://www.rcophth.ac.uk/publications/guidelines/cataract_surgery10.html	Awaited					
Other intra-ocular surgery						
Dacryocystrhinostomies						

	Primary Antibiotics	Dose	Secondary Antibiotics	Dose	Tertiary Antibiotics	Dose
ORTHOPAEDIC SURGERY						
Total hip replacement	Cefuroxime	1.5 g			Teicoplanin	400 mg
Prosthetic knee joint replacement	Cefuroxime	1.5 g			Teicoplanin	400 mg
Closed fracture fixation	Cefuroxime	1.5 g			Teicoplanin	400 mg
Hip fracture repair	Cefuroxime	1.5 g			Teicoplanin	400 mg
Spinal surgery	Cefuroxime	1.5 g			Teicoplanin	400 mg
Insertion of prosthetic device	Cefuroxime	1.5 g			Teicoplanin	400 mg

	Primary Antibiotics	Dose	Secondary Antibiotics	Dose	Tertiary Antibiotics	Dose
UROLOGY						
Transrectal prostate biopsy	Ciprofloxacin	500 mg Oral				
Shock-wave lithotripsy	Ciprofloxacin	500 mg Oral				
Transurethral resection of the prostate	Co-amoxiclav	1.2 g	Cefuroxime	1.5 g	Gentamicin	2 mg/kg
Cystectomy	Co-amoxiclav	1.2 g	Cefuroxime	1.5 g	Gentamicin	2 mg/kg
Insertion of prosthetic device	Co-amoxiclav	1.2 g	Cefuroxime	1.5 g	Gentamicin	2 mg/kg

Appendix 2. PHPS Form 07 001U Documentation of Preparation, Approval, Publishing, Audit and Review of Drug Therapy Guidelines

Record of Preparation, Publishing, Audit and Review of Drug Therapy Guidelines

Preparation

Title of Drug Therapy Guideline	Antibiotic Prophylaxis in Surgery
Name of Guideline Project Manager	Richard Brindle

Membership of Guideline Development Group	**Date**
1Richard Brindle	October 2003
2Helen McHale	October 2003
3All lead Consultant Surgeons had the oportunity to view the guidelines and have an input.	October 2003
4The Directorate Surgical Pharmacists had the oportunity to view the guidelines and have an input.	October 2003
5A patient viewed the guideline and had an input	October 2003
6	
7	
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Methods used to formulate recommendations
The guidelines are a summary of the recommendations made in the SIGN guidelines on Antibiotic prophylaxis in Surgery. The guidelines have been viewed by the lead Surgeons from Portsmouth Hospitals NHS Trust, the Surgical Directorate Pharmacists and no concerns were raised over them. As a concensus of opinion was reached no further drafts were produced.

Documentation of Review Process		
Reviewing groups		**Date**
Initial proposal	Guideline Development Group	October 2003
Draft 2		
Draft 3		
Draft 4		
Finalisation by Guideline Development Group		October 2003

Documentation of Minimum Requirements (state reasons for exclusion and enter the information if it is not included for any other reason than it is not applicable in the boxes below)	
Requirement	**Inc**
Reasons for developing drug therapy guideline	☒
Objectives of drug therapy guideline	☒
A description of patients to whom the guideline should apply (not ageist)	☒
A clear description of condition to be detected, treated or prevented	☒
Clear description of health benefits likely to be gained from following the guidelines	☒
Clear definition of alternative options for management of the condition	☒
Statement of how the guideline to be disseminated Not included to keep the guideline concise. Guideline to be published on the Trust intranet and possibly as a paper copy to be distributed to wards and Doctors.	☐
Clear presentation of the recommendations	☒
An adequate description of harms and risks associated with recommended management General risks of antibiotic use have been stated e.g. antibiotic resistance and Clostridium difficile. Adverse reactions caused by individual antibiotics have not been included because these are readily available in the BNF and relevant product datasheets.	☒
Reference to key national guidelines	☒
Comment concerning evidence base National guidelines (SIGN, Antibiotic Prophylaxis in Surgery Guidelines) have been adopted to form these guidelines. recommendations in the SIGN guidelines have been taken from randomised controlled trials, literature of overall good quality, evidence from expert committee reports; opinions and clinical experiences of respected authorities. The evidence has been graded according to the quality of evidence used. For individual levels of evidence refer to the SIGN guidelines.	☒

Documentation of Additional Information	
Requirement	**Inc**
Estimated costs of expenditures likely to occur from the recommended management	☐
Explicit statement of how patient preferences should be taken into account in applying the guidelines	☐
Clear definition of standards or targets or measurable outcomes, that can be monitored	☐

References Used in Preparing Drug Therapy Guideline

Scottish intercollegiate Guidelines network. Antibiotic Prophylaxis in Surgery. 2000

Methods Used to Interpret Strength of Evidence
The evidence in the SIGN guidelines has been graded: A - Requires at least one randomised controlled trial as a part of a body of literature of overall good quality and consistency addressing the specific recommendation. (Evidence levels 1a, 1b) B -Requires the availability of well conducted clinical clinical studies but no randomised clinical trials on the topic of recommendation. (Evidence levels 2a, 2b,3) C - Requires evidence obtained from expert committee reports or opinions and/or clincial experiences of respected authorities. Indicates and absence of directly applicable clinical studies of good quality. (Evidence levels 4)

Approval

Documentation of Approval Process	
Group	**Date**
Approval by Formulary and Medicines Group	
Approval by Guidelines and Medicines Management Committee	
Approval by Area Prescribing Committee	
Approval by sub-committee of Clinical Governance Committee	

Publishing and Dissemination

Final version Prepared by;		**Date**
Final version placed on intranet website by		**Date**
Intranet address		
Alternative publication methods		

Documentation of Pilot Process (If applicable)	
Pilot Process	**Duration**
Not applicable	
Audit of Pilot Process	
Not applicable	
Changes made due to results of pilot process Not applicable	

Review

Review Date Proposed by Guideline Development Group		**Date** Nov 2005
Proposed review methodology		
Literature search and multidisciplinary review.		
Review date and method agreed by relevant approval committee?	**Yes**☐	**No**☐
Revised and approved review date or method		
Review completed by		**Date**
Revised version prepared by		**Date**
Revised version placed on intranet website by		**Date**
Intranet address		

Detailed documentation of review of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWIYY

Audit

Audit date proposed by Guideline Development Group		**Date** November 2004
Proposed audit methodology		
Audit date and method approved by relevant approval committee?	**Yes** ☐	**No** ☐
Revised and approved audit date or method		
Audit completed		**Date**
Results reported by		
Results reported to		
Changes to guideline required?	**Yes** ☐	**No** ☐
Revised version prepared by		**Date**
Revised version placed on intranet website by		**Date**
Intranet address		

Detailed documentation of audits of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWI07 001U

Portsmouth Hospitals NHS Trust
Pharmacy Service

Clinical Guideline No 49.01 2003

VAGINAL INFECTIONS

General

- Vulvo-vaginal candidosis, bacterial vaginosis and trichomoniasis are the most common vaginal infections.
- Completion of the entire course of recommended treatment is essential.
- In peri- and post-menopausal women, Oestriol Cream (Ovestin) will help prevent secondary bacterial invasion associated with vaginal oestrogen deficiency.

The objectives of this guideline are to:

- Treat vulvo-vaginal candidosis, bacterial vaginosis and trichomoniasis.
- Use treatments in a manner supported by evidence of effectiveness.

This guideline applies to all female adult patients with the defined condition.

Vulvo-vaginal Candidosis

1. **Symptoms**
   Patients complain of irritation and soreness, vaginal discharge and sometimes discomfort with intercourse.

2. **First Line Treatment**
   Imidazole derivatives have replaced nystatin as the standard first-line treatment. Single dose local therapies should be preferred to maximise adherence, eg:

   - Canesten 500mg pessary (clotrimazole)
   - Canesten 10% vaginal cream (clotrimazole)
   - Gyno-Daktarin 1.2g ovule (miconazole; GUM only)
   - Gyno-Daktarin 100mg pessary twice daily or 100mg once daily (GUM only)

   Lower strength versions of any of these can be used each day over a 3-7 day period.

   Patients with severe pruritus and vulval excoriation may gain more rapid relief by the application of a steroid-containing cream **as well** (eg Canesten HC or Daktacort).

3. **Oral Medication**
   - As effective as single dose local treatments but expensive.
   - Reserve for resistant infections, those occurring in the presence of other conditions such as genital herpes, and in selected immunocompromised patients.
   - **Dose**: Fluconazole 150mg stat or Itraconazole 200mg bd for one day.

4. **Recurrent Infection**
   Recurrent vaginal candidosis should be confirmed microbiologically and referral to a specialist considered. Long term use of low-dose vaginal pessaries over many months is often necessary in these cases.

   Treatment of asymptomatic male partners is rarely helpful in preventing recurrence.

Portsmouth Hospitals NHS Trust
Pharmacy Service

Clinical Guideline No 49.01 2003

Bacterial Vaginosis

1. **Symptoms**
   Patients complain of a maladorous vaginal discharge.

2. **First Line**
   Metronidazole 400mg bd for 5 days. Sexual partners do not usually need to be treated.

3. **Alternative**
   Metronidazole 0.75% (zidoval) vaginal cream inserted at night for one week at a dosage of 5g is useful for patients who cannot tolerate metronidazole.

Trichomoniasis

1. **Symptoms**
   Patients complain of a smelly vaginal discharge with vulval soreness. Trichomoniasis is much less common than vaginal candidosis and bacterial vaginosis. It often involves the lower urinary tract as well as the genital tract and requires systemic treatment.

2. **Investigation**
   Trichomoniasis is a sexually transmitted infection and patients should be referred to GUM for full screening as a second STI will be present in 40-50%. Contact tracing must also be carried out in all cases.

3. **Treatment**
   Metronidazole is effective; there are 3 different regimens:

   - 400mg bd for 5 days
   - 2g stat dose
   - 200mg tds for 7 days

   Metronidazole may interact with alcohol, so patients must avoid alcohol.

   In pregnancy metronidazole should only be used if considered essential. The short high-dose regimen is not recommended.

Key National References

Association of GU Medicine National Guidelines 2002 (www.agum.org.uk) :

- National Guidelines for the management of bacterial vaginosis.
- National Guidelines for the management of vulvovaginal candidiasis.
- National guidelines for the management of trichomonas vaginalis.

Evidence Base

These recommendations have been based on evidence taken from meta-analysis of randomised controlled trials from literature of overall good quality and consistency addressing the specific recommendation; randomised controlled trials and well conducted clinical studies. For specific ratings refer to national guideline.

Linda Tucker, Dr JM Tobin and Andy Fox manage this guideline (ext)
See Trust Policy for the production of Drug Therapy Guidelines.
Approved by: Date
Ratified by: Date
Review date:

Appendix 2. PHPS Form 07 001U Documentation of Preparation, Approval, Publishing, Audit and Review of Drug Therapy Guidelines

Record of Preparation, Publishing, Audit and Review of Drug Therapy Guidelines

Preparation

Title of Drug Therapy Guideline	Vaginal Infections
Name of Guideline Project Manager	Andy Fox

Membership of Guideline Development Group	**Date**
1Andy Fox	September 2003
2Mrs Linda Tucker	September 2003
3Dr JM Tobin	September 2003
4Helen McHale	September 2003
5	
6A patient	
7	
8	

Methods used to formulate recommendations
The guidelines consist of a summary of the national guidelines (Association of GU medicine National guidelines on vaginosis, candidiasis and trichomonas 2002). The national guidelines have been formulated by evaluating evidence and recommending treatments with the strongest evidence base. The Portsmouth Hospitals NHS Trust guidelines on vaginal infections have been reviewed by lead consultants, nurses and the directorate pharmacist in the area and a consensus of opinion formed.

Documentation of Review Process		
Reviewing groups		**Date**
Initial proposal	Guideline Development Group	01 September 2003
Draft 2	Reviewed by L. Tucker and Dr Tobin	September 2003
Draft 3	Ammended by Helen McHale (objectives,comment concerning evidence base and references added)	October 2003
Draft 4		
Finalisation by Guideline Development Group		

Documentation of Minimum Requirements (state reasons for exclusion and enter the information if it is not included for any other reason than it is not applicable in the boxes below)	
Requirement	**Inc**
Reasons for developing drug therapy guideline	☒
Objectives of drug therapy guideline	☒
A description of patients to whom the guideline should apply (not ageist)	☒
A clear description of condition to be detected, treated or prevented	☒
Clear description of health benefits likely to be gained from following the guidelines	☒
Clear definition of alternative options for management of the condition	☒
Statement of how the guideline to be disseminated Conciseness. To be published on Trust intranet and possibly a paper copy to be distributed to hospital wards.	☐
Clear presentation of the recommendations	☒
An adequate description of harms and risks associated with recommended management Conciseness. Adverse reactions of preparations are readily available in the BNF and relevant product datasheets.	☐
Reference to key national guidelines	☒
Comment concerning evidence base	☒

Documentation of Additional Information	
Requirement	**Inc**
Estimated costs of expenditures likely to occur from the recommended management	☐
Explicit statement of how patient preferences should be taken into account in applying the guidelines	☐
Clear definition of standards or targets or measurable outcomes, that can be monitored	☐

References Used in Preparing Drug Therapy Guideline
Association of GU medicine national guidelines 2002 at www.agum.org.uk. National Guidelines for the Management of Bacterial Vaginosis National Guidelines for the Management of Vulvovaginal Candidiasis National Guidelines for the Management of Trichomonas Vaginalis.

Methods Used to Interpret Strength of Evidence
The national guidelines have used graded evidence:

A - Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation. (Evidence levels 1a and 1b)

B - Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation. (Evidence levels 2a, 2b)

For Specific evidence weightings for various recommendations see national guidelines.

Approval

Documentation of Approval Process	
Group	**Date**
Approval by Formulary and Medicines Group	
Approval by Guidelines and Medicines Management Committee	
Approval by Area Prescribing Committee	
Approval by sub-committee of Clinical Governance Committee	

Publishing and Dissemination

Final version Prepared by;		**Date**
Final version placed on intranet website by		**Date**
Intranet address		
Alternative publication methods		

Documentation of Pilot Process (If applicable)	
Pilot Process	**Duration**
Not applicable	
Audit of Pilot Process	
Not applicable	
Changes made due to results of pilot process Not applicable	

Review

Review Date Proposed by Guideline Development Group		**Date**
Proposed review methodology		
Review date and method agreed by relevant approval committee?	**Yes☐**	**No☐**
Revised and approved review date or method		
Review completed by		**Date**
Revised version prepared by		**Date**
Revised version placed on intranet website by		**Date**
Intranet address		

Detailed documentation of review of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWIYY

Audit

Audit date proposed by Guideline Development Group		**Date**
Proposed audit methodology		
Audit date and method approved by relevant approval committee?	**Yes** ☐	**No** ☐
Revised and approved audit date or method		
Audit completed		**Date**
Results reported by		
Results reported to		
Changes to guideline required?	**Yes** ☐	**No** ☐
Revised version prepared by		**Date**
Revised version placed on intranet website by		**Date**
Intranet address		

Detailed documentation of audits of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWI07 001U

Calculation of Drug Doses (DRAFT)

Introduction

There are several methods of calculating drug dosages, the use of 'first principles' being one. If, however, you have difficulty in the application of arithmetic principles to drug dosage calculation, the following guidelines are offered:

Abbreviations Used In Relation To Drug Dosages

	SI Unit	Symbol
Units of weight	Kilogram	Kg
	Gram	g
	Milligram	mg
	Microgram	Microgram (mcg and µg unofficial)
	Nanogram	Nanogram (ng unofficial)
Units of volume	Litre	L
	Millilitre	ml

Converting From One Unit to Another

Units of weight:	1Kg	=	1000 g
	1g	=	1000 mg
	1mg	=	1000 microgram
	1microgram	=	1000 nanograms

In series they stand as such:

Kg	g	mg	microgram	nanogram

To convert to the next smallest unit (eg mg to microgram), multiply by 1000 for each step or move the decimal point three places to the right. To convert to the next largest unit (eg mg to g), divide by 1000 or move the decimal point three places to the left for each step.

Example:

Kg	g	mg	microgram	nanogram
0.001Kg	1g	1000mg	1,000,000 micrograms	
	0.0505g	50.5mg	50,500 micrograms	
		0.01075mg	10.75 micrograms	10,750 nanograms

Units of volume:	1Litre	=	1000ml
(The same principles apply)	0.5L	=	500ml

Use of Decimal Points
Avoid unnecessary use of decimal points ie:

Quantities <1g should be written in milligrams
<1mg should be written in micrograms

If unavoidable a zero should be written in front when there are no other figures e.g. 0.5ml not .5ml

Five Steps of Drug Calculation

1. **FORMULA:** Dose to be given = $\frac{\text{Dose prescribed}}{\text{Dose per measure}}$
2. Decide what the measure is (tablets, spoonful, ml)
3. Work out the dose per measure.
4. Check that the dose prescribed and the dose per measure are in the same units. If not, convert to the smaller unit to avoid decimals (see section CONVERTING FROM ONE UNIT TO ANOTHER).
5. Ask "is this reasonable?" If unsure, check.

Example Using Five Step Method:
Digoxin elixir has 0.1mg in 2ml. Dose prescribed is 250micrograms.

1. Doses to be given = $\frac{\text{Dose prescribed}}{\text{Dose per measure}}$
2. The measure is ml
3. The dose per measure is $\frac{0.1}{2}$ = 0.05mg in each ml
4. Dose prescribed is 250 micrograms.
   Dose per measure (ml) is 0.05mg - convert this dose to microgram, 0.05mg x 1000 = 50 micrograms.
   Calculation $\frac{250}{50}$ = 5ml.
   Give 5ml Digoxin Elixir
5. Is this reasonable? – YES.

Three Steps Of Drug Calculation

1. **FORMULA:** Dose to be given = $\frac{\text{Dose prescribed}}{\text{Stock available}}$ x volume of stock solution
2. Check that the dose prescribed and the dose per measure are in the same units. If not, convert to the smaller unit to avoid decimals (see section CONVERTING FROM ONE UNIT TO ANOTHER).
3. Ask "is this reasonable?" If unsure, check.

Example Using Three Step Method:
Digoxin elixir has 0.1mg in 2ml. Dose prescribed is 250micrograms.

1. Doses to be given = $\frac{\text{Dose prescribed}}{\text{Stock available}}$ x volume of stock solution
2. Dose prescribed is 250 micrograms
   Stock available is 0.1mg – convert this dose to micrograms, 0.1mg x 1000 = 100 micrograms
   Calculation $\frac{250}{100}$ x 2 = 5ml.
   Give 5ml Elixir
3. Is this reasonable? – YES.

Calculation Of Intravenous Infusion Rates

ml per hour = volume to be infused divided by **time** for the infusion **in hours**

ml per minute = ml per hour divided by **60** (minutes)
drops per minute = ml per minute x **number of drops per ml**
Check number of drops per ml on infusion set

Example:

- **ml per hour**

Prescription says: Isosorbide dinitrate: infuse at 4mg per hour
Stock solution is isosorbide 10mg in 10ml

dose per ml = $\frac{10mg}{10ml}$ = 1mg per ml, **dose per hour is 4mg**

Volume to be infused per hour is $\frac{4mg \text{ per hour}}{1mg \text{ per ml}}$ = 4ml per hour

- **Drops per minute**

ml per minute= $\frac{4}{60}$

Number of drops per ml on the infusion set = 20

Drops per minute = $\frac{4}{60}$ x 20 = $\frac{80}{60}$ = 1.3 drops per minute

Calculation Of Infusion Dosage Involving The Patient's Weight

Prescription = **dose** per **Kg** per **unit of time** (minute, hour)

Step 1: **dose** x **weight** (Kg) = **dose per unit of time**

Step 2: **If** the unit of time is **minute**:

dose per hour = **dose per minute** x 60

or

If the unit of time is **hour:**

dose per minute = $\frac{\text{dose per hour}}{60}$

To convert pounds to Kilograms refer to the conversion chart kept on the ward.

Example:

Prescription says Dobutamine **4microgram per Kg per minute**

Patient's weight = 65Kg
Dose per minute is 4 x 65 = 260microgram
Dose per hour = 260microgram x 60 minutes = 15600microgram or 15.6mg
Dose per hour = 15.6mg

For calculation of the infusion rate, see section CALCULATION OF INTRAVENOUS INFUSION RATES.

Evidence Base

The information in this guideline is based on theoretical principles.

Helen McHale, Guidelines Pharmacist, manages this guideline (ext 6636)
See Trust Policy for the Production of Drug Therapy Guidelines
Approved by: Date:
Ratified by: Date:
Review date:

Appendix 2. PHPS Form 07 001U Documentation of Preparation, Approval, Publishing, Audit and Review of Drug Therapy Guidelines

Record of Preparation, Publishing, Audit and Review of Drug Therapy Guidelines

Preparation

Title of Drug Therapy Guideline	Caclulation of Drug Doses
Reference number	65.01
Name of Guideline Project Manager	Helen McHale

Membership of Guideline Development Group	**Date**
1Helen McHale	Nov 2003
2Senior Pharmacists viewed the guideline	Dec 2003
3	
4	
5	
6	
7	
8	

Methods used to formulate recommendations
This guideline has been produced using theoretic mathematical principles. It has been viewed by Senior pharmacists and a consensus of opinion reached.

Documentation of Development Process		
Reviewing groups		**Date**
Initial proposal	Guideline Development Group	November 2003
Draft 2		
Draft 3		
Draft 4		
Finalisation by Guideline Development Group		

Documentation of Minimum Requirements (state reasons for exclusion and enter the information if it is not included for any other reason than it is not applicable in the boxes below)	
Requirement	**Included**
Reasons for developing drug therapy guideline	☒
Objectives of drug therapy guideline	☒
A description of patients to whom the guideline should apply (not ageist)	☒
A clear description of condition to be detected, treated or prevented Not applicable	☐
Clear description of health benefits likely to be gained from following the guidelines Not applicable	☐
Clear definition of alternative options for management of the condition Not applicable	☐
Statement of how the guideline to be disseminated Not included for conciseness sakes. To be published on the trust extranet and a paper copy to be distributed to the wards and included in the doctors inductions packs. To be emailed to PCTs pharmacists and doctors.	☐
Clear presentation of the recommendations	☒
An adequate description of harms and risks associated with recommended management Not applicable	☐
Reference to key national guidelines Not applicable	☐
Comment concerning evidence base	☒

Documentation of Additional Information	**Incl**
Estimated costs of expenditures likely to occur from the recommended management	☐
Explicit statement of how patient preferences should be taken into account in applying the guidelines	☐
Clear definition of standards or targets or measurable outcomes, that can be monitored	☐

References Used in Preparing Drug Therapy Guideline
Barber N, Willson A, Clinical Pharmacy Survival Guide. Churchill Livingstone. London. 1999. Portsmouth Hospitals NHS Trust Medicines Policy. Cited on Trust intranet November 2003.

Methods Used to Interpret Strength of Evidence
This guideline is not evidence based but a summary of theoretical principles.

Approval

Documentation of Approval Process	
Group	**Date**
Approval by Formulary and Medicines Group	
Approval by Guidelines and Medicines Management Committee	
Approval by Area Prescribing Committee	
Ratified by sub-committee of Clinical Governance Committee	

Publishing and Dissemination

Final version prepared by;		**Date**
Final version placed on intranet website by		**Date**
Intranet address		
Alternative publication methods		

Pilot Process (if applicable)	**Duration**
Not applicable	
Audit of Pilot Process	
Not applicable	
Changes made as a result of pilot process	
Not applicable	

Review

Review date/frequency proposed by Guideline Development Group			**January 2006**
Proposed review methodology			
literature search for current practice and pharmacy review			
Review date and method agreed by relevant approval committee?	**Yes** ☐		**No** ☐
Revised and approved review date or method			
Review completed by			**Date**
Changes to guideline required?	**Yes** ☐		**No** ☐
Revised version prepared by*			**Date**
Revised version placed on intranet website by:			**Date**
Intranet address:			

* Detailed documentation of review of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWI07 001U.

Audit

Audit date proposed by Guideline Development Group			**Date** November 2005
Proposed audit methodology			
Audit date and method approved by relevant approval committee?		**Yes** ☐	**No** ☐
Revised and approved audit date or method			
Audit completed			**Date**
Results reported by			
Results reported to			
Changes to guideline required?		**Yes** ☐	**No** ☐
Revised version prepared by*			**Date**
Revised version placed on intranet website by			**Date**
Intranet address			

* Detailed documentation of audits of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWI07 001U.

Omeprazole Intravenous Infusion for bleeding ulcers

Reasons
Use of IV omeprazole is unlicensed for bleeding gastric ulcers.

Objectives
To ensure the safe administration of IV omeprazole as an infusion.

Indications For adults with:

- Bleeding gastric ulcers[1].

Preparation

- 40mg vials of powder for solution for infusion.

Administration

Omeprazole IV should only be administered by intravenous infusion.

Preparation of first dose[2] for bleeding gastric ulcers

- Reconstitute two 40mg vials by adding 5ml from a 250ml sodium chloride 0.9% infusion bag to each 40ml vial.
- Add the reconstituted contents of the two 40mg vials back into the infusion bag to give 80mg in 250ml sodium chloride 0.9%.

Preparation of second dose[2]

- Reconstitute one 40mg vial by adding 5ml from a 100ml sodium chloride 0.9% infusion bag to each 40mg vial.
- Add the reconstituted contents of the vial back into the infusion bag to give 40mg in 100ml sodium chloride 0.9%.

Dose

Omeprazole 80mg IV over 1 hour followed by a continuous intravenous infusion of 8mg per hour for 72 hours[1].

Adverse Effects

- Skin rash, urticaria and pruritus have been reported, usually resolving after discontinuation of treatment[3].
- Diarrhoea and headache have been reported and may be severe enough to require discontinuation of therapy in a small number of patients, in the majority symptoms resolve on discontinuation of therapy[3].
- Other gastrointestinal reactions have included constipation, nausea/vomiting, flatulence and abdominal pain[3].
- Increase in liver enzymes has been observed rarely[3].

Contra-indications

Known hypersensitivity to any of the constituents of the formulation[3].

Cautions

- When gastric ulcer is suspected, malignancy should be excluded before treatment is commenced as treatment may alleviate symptoms and delay diagnosis[3].
- Treatment may lead to a slightly increased risk of gastrointestinal infections[3].

Interactions

- Absorption of itraconazole and ketoconazole may be reduced[3].
- Omeprazole undergoes oxidative metabolism involving the cytochrome P450 enzyme system and may delay the elimination of diazepam, phenytoin and warfarin. Monitoring of patients receiving phenytoin or warfarin is recommended and reduction in dose may be required when omeprazole is added to treatment[3].
- Plasma concentrations of omeprazole and clarithromycin are increased during concomitant oral administration[3].
- Simultaneous treatment of omeprazole and digoxin in healthy subjects led to a 10% increase in the bioavailability of digoxin as aconsequence of the increased intragastric pH[3].
- Interaction with other drugs also metabolised via the cytochrome P450 system cannot be excluded[3].

Monitoring

Monitor for undesirable side effects eg diarrhoea.
Monitor usual observations.

Y-site compatibilities

No y-site compatibilities documented[4].

References

1. J. Lau, J. L. Sung, K. Lee et al. Effect of Ontravenous Omeprazole on recurrent bleeding after Endoscopic Treatment of bleeding peptic ulcers.NEJM 2000:343;310-6.
2. Information from St. Georges Hospital NHS Trust regarding preparation of IV omeprazole infusion.
3. Losec Infusion SPC from the EMC, Astra Zeneca UK Ltd. Last updated 02-July-2002. www.emc.vhn.net.
4. Trissel LA, Handbook of Injectable Drugs, 12th ed. American Society of Health System Pharmacists. 2003.

Evidence Base

No graded evidence or large randomisd controlled trials, information taken from small studies and experience. The use of IV omeprazole in bleeding ulcers is not covered by the manufacturer's product licence.

Rosemary Dempsey, Medical Services Pharmacist, manages this guideline (ext 5412)
See Trust Policy for the Production of Drug Therapy Guidelines
Approved by: Date:
Ratified by: Date:
Review date:

Appendix 2. PHPS Form 07 001U Documentation of Preparation, Approval, Publishing, Audit and Review of Drug Therapy Guidelines

Record of Preparation, Publishing, Audit and Review of Drug Therapy Guidelines

Preparation

Title of Drug Therapy Guideline	Omeprazole Intravenous Infusion	
Reference number	105.01	
Name of Guideline Project Manager	Rosemary Dempsey	
Membership of Guideline Development Group		**Date**
1Rosemary Dempsey 2RV by gastroenterology consultants – Dr Goggin and Dr Duncan 3 4 5 6 7 8		18/11/03 December 2003

Methods used to formulate recommendations
Literature search of OVID, review of recommended texts in Medicines Information, Multidisciplinary review of the guideline by consultants, nurses and pharmacists.

Documentation of Development Process		
Reviewing groups		**Date**
Initial proposal	Guideline Development Group Rosemary Dempsey	18/11/03
Draft 2	RV by gastroenterology consultants, Dr Goggin and Dr Duncan	04/12/03
Draft 3		
Draft 4		
Finalisation by Guideline Development Group		

Documentation of Minimum Requirements (state reasons for exclusion and enter the information if it is not included for any other reason than it is not applicable in the boxes below)	
Requirement	**Included**
Reasons for developing drug therapy guideline	☒
Objectives of drug therapy guideline	☒
A description of patients to whom the guideline should apply (not ageist)	☒
A clear description of condition to be detected, treated or prevented	☒
Clear description of health benefits likely to be gained from following the guidelines	☒
Clear definition of alternative options for management of the condition	☒
Statement of how the guideline to be disseminated Not included for conciseness. To be put on intranet and paper copy to wards and doctors	☐
Clear presentation of the recommendations	☒
An adequate description of harms and risks associated with recommended management	☒
Reference to key national guidelines None available	☐
Comment concerning evidence base	☒

Documentation of Additional Information	**Incl**
Estimated costs of expenditures likely to occur from the recommended management	☐
Explicit statement of how patient preferences should be taken into account in applying the guidelines	☐
Clear definition of standards or targets or measurable outcomes, that can be monitored	☐

References Used in Preparing Drug Therapy Guideline

1. J. Lau, J. L. Sung, K. Lee et al. Effect of Intravenous Omeprazole on recurrent bleeding after Endoscopic Treatment of bleeding peptic ulcers.NEJM 2000:343;310-6
2. Losec Infusion SPC from the EMC, Astra Zeneca UK Ltd. Last updated 02-July-2002. www.emc.vhn.net.
3. Information from St. Georges Hospital NHS Trust regarding preparation of IV omeprazole infusion.
4. Trissel LA, Handbook of Injectable Drugs, 12th ed. American Society of Health System Pharmacists. 2003.

Methods Used to Interpret Strength of Evidence
Consensus of expert opinion both outside the trust (St Georges Hospital) and on discussion with

consultants.

Approval

Documentation of Approval Process	
Group	**Date**
Approval by Formulary and Medicines Group	
Approval by Guidelines and Medicines Management Committee	
Approval by Area Prescribing Committee	
Ratified by sub-committee of Clinical Governance Committee	

Publishing and Dissemination

Final version prepared by;		**Date**
Final version placed on intranet website by		**Date**
Intranet address		
Alternative publication methods		

Pilot Process (if applicable)	Duration
N/A	
Audit of Pilot Process	
N/A	
Changes made as a result of pilot process	
N/A	

Review

Review date/frequency proposed by Guideline Development Group		Two years
Proposed review methodology		
Discussion with consultants and pharmacists. Review of evidence available		
Review date and method agreed by relevant approval committee?	**Yes** ☐	**No** ☐
Revised and approved review date or method		
Review completed by		**Date**
Changes to guideline required?	**Yes** ☐	**No** ☐
Revised version prepared by*		**Date**
Revised version placed on intranet website by:		**Date**
Intranet address:		

* Detailed documentation of review of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWI07 001U.

Audit

Audit date proposed by Guideline Development Group		**Date**	
Proposed audit methodology			
Audit date and method approved by relevant approval committee?		**Yes** ☐	**No** ☐
Revised and approved audit date or method			
Audit completed		**Date**	
Results reported by			
Results reported to			
Changes to guideline required?		**Yes** ☐	**No** ☐
Revised version prepared by*		**Date**	
Revised version placed on intranet website by		**Date**	
Intranet address			

* Detailed documentation of audits of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWI07 001U.

Pneumonia, Community Acquired

INTRODUCTION

Community acquired pneumonia is common and associated with significant morbidity, mortality and is a drain on NHS resources. These guidelines deal with antibiotic treatment of Community Acquired Pneumonia in patients admitted to hospital and are based on the BTS guidelines but supportive therapy (e.g. oxygen and IV fluids) should also be considered.

The objectives of these guidelines are to decrease:

- The use of iv broad-spectrum antibiotics.
- The use of combination antibiotic therapy.
- Antibiotic costs.
- The occurrence of antibiotic induced side effects e.g. Clostridium difficile.

These guidelines do **not** apply to **patients with Chronic Obstructive Pulmonary Disease (COPD).** These patients should be treated with bronchodilators, systemic steroids and controlled oxygen therapy. Physiotherapy may be indicated in bronchiectasis or COPD. Antibiotic recommendations for patients with COPD can be found in the BTS guidelines on the management of COPD.

The most common cause of acute bacterial pneumonia is *Streptococcus pneumoniae.* **Less common causes are:** *Mycoplasma pneumoniae, Legionella pneumoniae, Chlamydia, Haemophilus influenzae & Staphylococcus aureus.* **It is impossible to differentiate one from another clinically or radiologically.**

ASSESMENT OF SEVERITY

Many patients with pneumonia can be managed on the ward with oral antibiotics. Patients with severe pneumonia may need admission to Respiratory High Care or Critical Care.

Adverse prognostic features

1. Age >50
2. Presence of co-existing disease

Severe pneumonia exists when two or more of the core features are present.

1. Confusion, abbreviated mental test score <9
2. Urea >7mmol/l
3. Respiratory rate >30/minute
4. Blood pressure, systolic <90 and or diastolic <60 mm Hg

Additional adverse prognostic features

1. Oxygenation SaO2 <92%, PaO2 <8kPa, regardless of FiO2
2. Bilateral or multilobe involvement

INVESTIGATIONS

1. Chest x-ray
2. Blood gases, recording the FiO_2
3. Blood for U&Es, CRP, FBC
4. Blood cultures
5. Clotted blood sample for acute serology (tested with convalescent sample)
6. Sputum, if available, for culture (microscopy is not routinely performed)
7. Urine for pneumococcal and legionella antigen in severe pneumonia

ANTIBIOTIC THERAPY

MILD PNEUMONIA	SEVERE PNEUMONIA
Amoxycillin caps 1g tds and **Erythromycin tabs 500mg qds** If IV therapy is needed: **Amoxycillin IV 1g tds or** **Benzylpenicillin IV 1.2g qds** and **Erythromycin IV 500 mg qds** If allergic to penicillin treat with erythromycin alone.	**Co-amoxiclav IV 1.2g tds or Cefuroxime IV 1.5g tds** and **Erythromycin IV 500mg qds** Change to oral medication as below within 48 hours if possible: **Co-Amoxiclav 625mg tds** and **Erythromycin tabs 500mg qds**

Notes

1. Change medication if clinically relevant microbiological results become available.
2. Ask specialist advice if immunosuppression is suspected, or if the patient does not improve or deteriorates on this treatment.
3. Change to oral medication within 48 hours if possible.
4. Duration of therapy depends upon clinical response.

Key National References

British Thoracic Guidelines for the Management of Community Acquired pneumonia in Adults. Thorax. 2001, 56 supplement IV, iv1-iv64.

Evidence Base

The recommendations in this guideline have been made on the basis of assessing a matrix of laboratory, clinical, pharmacokinetic and safety data, interpreted in an informed manner. There is a need for prospective randomised controlled trials to enable the management of community acquired pneumonia on a truly evidenced basis. For specific gradings see the national guidelines.

Dr Richard Brindle, Consultant Microbiologist, manages this guideline.
See Trust Policy for the Production of Drug Therapy Guidelines.
Approved by: Date:
Ratified by: Date:
Review date:

Appendix 2. PHPS Form 07 001U Documentation of Preparation, Approval, Publishing, Audit and Review of Drug Therapy Guidelines

Record of Preparation, Publishing, Audit and Review of Drug Therapy Guidelines

Preparation

Title of Drug Therapy Guideline	Pneumonia Community Acquired
Reference number	41.01
Name of Guideline Project Manager	Dr Richard Brindle

Membership of Guideline Development Group	**Date**
1Dr Richard brindle	September 2003
2Helen McHale	November 2003
3Viewed by lead respiratory consultants	September 2003
4Viewed by microbiologists	September 2003
5Viewed by MAU Consultants	September 2003
6	
7	
8	

Methods used to formulate recommendations
British Thoracic Guidelines for the management of community acquired pneumonia in adults have been adopted for this guideline. The national guideline has been produced on the basis of assessing a matrix of laboratory, clinical, pharmacokinetic and safety data, interpreted in an informed manner. While this remains an unsatisfactory basis for making robust evidence based recommendations, it highlights the need for appropriate, prospective, randomised controlled studies, to enable the management of Community acquired pneumonia on a sounder basis. Only antibiotics that are licensed and available in the UK at the time these guidelines were prepared were considered (Quoted from BTS guidelines). These guidelines have been reviewed by SIGN. The guidelines also reflect the Portsmouth Hospitals District Formulary. A search of Medline, NICE, SIGN, Cochrane library, Bandolier, Department of Health web site, Drug info zone, ukmi, and eguidelines databases were carried out for more up to date information however it appears that the BTS guidelines give the most up to date recommendations by a respected organisation. The Portsmouth Hospitals NHS Trust guidelines on Community Acquired Pneumonia have been viewed by the lead respiratory consultants, Microbiologists, MAU consultants and senior pharmacists and a consensus of opinion reached.

Documentation of Development Process		
Reviewing groups		**Date**
Initial proposal	Guideline Development Group	September 2003
Draft 2	Reviewed by pharmacists	December 2003
Draft 3		

Draft 4		
Finalisation by Guideline Development Group		December 2003

Documentation of Minimum Requirements (state reasons for exclusion and enter the information if it is not included for any other reason than it is not applicable in the boxes below)	
Requirement	**Included**
Reasons for developing drug therapy guideline	☒
Objectives of drug therapy guideline	☒
A description of patients to whom the guideline should apply (not ageist)	☒
A clear description of condition to be detected, treated or prevented	☒
Clear description of health benefits likely to be gained from following the guidelines Treatment of Community acquired pneumonia	☐
Clear definition of alternative options for management of the condition The national guidelines recommend fluoroquinolones as an alternative to penicillins in penicillin allergic patients, however only levofloxacin and moxifloxacin are licensed for Community acquired pneumonia and these are not on the district formulary and therefore not recommended in this guideline.	☒
Statement of how the guideline to be disseminated Not included in the guideline for conciseness. Guideline to be published on the trust extranet and paper copies to be distributed to wards and doctors at the hospitals. Guideline to be emailed to PCT pharmacists and GP's	☐
Clear presentation of the recommendations	☒
An adequate description of harms and risks associated with recommended management Not included for conciseness. Adverse effects of antibiotics are readily available in BNFs on wards and product datasheets.	☐
Reference to key national guidelines	☒
Comment concerning evidence base	☒

Documentation of Additional Information	**Incl**
Estimated costs of expenditures likely to occur from the recommended management	☐
Explicit statement of how patient preferences should be taken into account in applying the guidelines	☐
Clear definition of standards or targets or measurable outcomes, that can be monitored	☐

References Used in Preparing Drug Therapy Guideline
BTS Guidelines for the management of Community Acquired Pneumonia in Adults. Thorax. 2001, 56 supplement 4, iv1-iv64.

Methods Used to Interpret Strength of Evidence
The evidence in the BTS guidelines has been graded: 1a A good recent systematic review of studies designed to answer the question of interest. 1b One or more rigorous studies designed to answer the question, but not formally combined. 2 One or more prospective clinical studies which illuminate, but do not rigorously answer the question.

3 One or more retrospective clinical studies which illuminate, but do not rigorously answer, they question. 4a Formal combination of expert views. 4b Other information. Unfortunately there is a lack of large prospective randomised controlled trials to enable management of community acquired pneumonia on a sounder basis.

Approval

Documentation of Approval Process	
Group	**Date**
Approval by Formulary and Medicines Group	
Approval by Guidelines and Medicines Management Committee	
Approval by Area Prescribing Committee	
Ratified by sub-committee of Clinical Governance Committee	

Publishing and Dissemination

Final version prepared by;		**Date**
Final version placed on intranet website by		**Date**
Intranet address		
Alternative publication methods		

Pilot Process (if applicable)	**Duration**
Not applicable	
Audit of Pilot Process	
Not applicable	
Changes made as a result of pilot process	
Not applicable	

Review

Review date/frequency proposed by Guideline Development Group		**January 2006**
Proposed review methodology		
Multidisciplinary review and literature search		
Review date and method agreed by relevant approval committee?	**Yes** ☐	**No** ☐
Revised and approved review date or method		
Review completed by		**Date**
Changes to guideline required?	**Yes** ☐	**No** ☐

Revised version prepared by*		**Date**
Revised version placed on intranet website by:		**Date**
Intranet address:		

* Detailed documentation of review of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWI07 001U.

Audit

Audit date proposed by Guideline Development Group			**Date** January 2005
Proposed audit methodology			
Audit date and method approved by relevant approval committee?		**Yes** ☐	**No** ☐
Revised and approved audit date or method			
Audit completed			**Date**
Results reported by			
Results reported to			
Changes to guideline required?		**Yes** ☐	**No** ☐
Revised version prepared by*			**Date**
Revised version placed on intranet website by			**Date**
Intranet address			

* Detailed documentation of audits of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWI07 001U.

(DRAFT)Compatibility of Intra-muscular (i.m.) Analgesics & Other Drugs in The Same Syringe

Introduction

This guideline has been developed in order to:

- Minimise the number of i.m. injections needing to be administered to patients when iv/ oral access is unavailable.
- Reduce the risk of causing harm to the patient by mixing drugs that are incompatible.

This guideline should apply to adult patients receiving i.m. injections of the following multiple drugs.

Recommendations

Several points should be considered when mixing drugs in the same syringe for i.m. administration:

- Once mixed in the syringe, the contents MUST BE USED IMMEDIATELY.
- The nurse or doctor administering a mixed injection of this type is responsible for checking that no precipitation has occurred in the syringe.

DO NOT ADMINISTER A MIXED INJECTION IF PRECIPITATION HAS OCCURRED

- It is not recommended that more than two drugs be mixed in the same syringe.
- The guidelines on compatibility below only apply to the doses stated and for mixtures given by the intra-muscular route.

The following individual analgesics may be mixed in the same syringe with any one drug in the anti-emetics/anti-secretory list:

Analgesic	Anti-emetic/ Anti-secretory
Morphine 10mg Papaveretum 20mg (Omnopon) Pethidine 100mg	Atropine 400-600microgram Hyoscine 400-600microgram Metoclopramide 10mg (Maxolon) Prochlorperazine 12.5mg (Stemetil)
Additionally, diamorphine at a dose of up to 20mg in 1ml water for injection, can be mixed with 10mg metoclopramide in the same syringe.	

Disadvantages/ Adverse Reactions

Slower onset of action of the drugs than with intravenous administration.
Pain at site of injection.

Evidence Base

This data is reproduced from The Handbook of Injectable Drugs (A collection of information from published literature on the pharmaceutics of parenteral medications as applied to the clinical setting).
None of these mixtures is covered by a manufacturer's product licence.

Helen McHale, Pharmacist, manages this guideline (ext 6636)
See Trust Policy for the Production of Drug Therapy Guidelines
Approved by: Date:
Ratified by: Date:
Review date:

Appendix 2. PHPS Form 07 001U Documentation of Preparation, Approval, Publishing, Audit and Review of Drug Therapy Guidelines

Record of Preparation, Publishing, Audit and Review of Drug Therapy Guidelines

Preparation

Title of Drug Therapy Guideline	Compatibility of Intramuscular (i.m.) Analgesics and other Drugs in the Same Syringe.
Reference number	25.01
Name of Guideline Project Manager	Helen McHale

Membership of Guideline Development Group	**Date**
1Helen McHale **2** **3** **4** **5** **6** **7** **8**	October 2003

Methods used to formulate recommendations
Literature searches of Medline, NICE, SIGN, Cochrane library, National Research register, Bandolier and relevant product datasheets were carried out. Resources in Medicines Information relevant to the subject were also refered to. The reviewed guideline was viewed by all Senior Pharmacists in the Trust and a consensus of opinion reached.

Documentation of Development Process		
Reviewing groups		**Date**
Initial proposal	Guideline Development Group	November 2003
Draft 2	Review by pharmacists	December 2003
Draft 3		
Draft 4		
Finalisation by Guideline Development Group		December 2003

Documentation of Minimum Requirements (state reasons for exclusion and enter the information if it is not included for any other reason than it is not applicable in the boxes below)	
Requirement	**Included**
Reasons for developing drug therapy guideline	☒
Objectives of drug therapy guideline	☒
A description of patients to whom the guideline should apply (not ageist)	☒
A clear description of condition to be detected, treated or prevented Not applicable	☐
Clear description of health benefits likely to be gained from following the guidelines	☒
Clear definition of alternative options for management of the condition	☒
Statement of how the guideline to be disseminated Published on trust intranet, extranet and paper copies to be distributed to the wards and doctors, electronic copies to be sent to PCTs.	☐
Clear presentation of the recommendations	☒
An adequate description of harms and risks associated with recommended management	☒
Reference to key national guidelines No national references	☐
Comment concerning evidence base	☒

Documentation of Additional Information	**Incl**
Estimated costs of expenditures likely to occur from the recommended management	☐
Explicit statement of how patient preferences should be taken into account in applying the guidelines	☐
Clear definition of standards or targets or measurable outcomes, that can be monitored	☐

References Used in Preparing Drug Therapy Guideline
Trissel L. Handbook of injectable drugs.12th ed. American Society of Health System pharmacists.Bethesda. 2003. The Pharmaceutical Codex. 12th ed. The pharmaceutical Press. Great Britain. 1994.

Methods Used to Interpret Strength of Evidence
The information in this guideline has been taken from the Handbook of Injectable Drugs. This text is a collection of information from published literature on the pharmaceutics of parenteral medications as applied to the clinical setting. While this is a highly recommended and reliable text in some instances entries give conflicting information possibly due to varying conditions or materials used in the studies. While the evidence used in this guideline is of reasonable quality a caution has been included so that if a combination of drugs does precipitate in a syringe they are not administered.

Approval

Documentation of Approval Process	
Group	**Date**
Approval by Formulary and Medicines Group	
Approval by Guidelines and Medicines Management Committee	
Approval by Area Prescribing Committee	
Ratified by sub-committee of Clinical Governance Committee	

Publishing and Dissemination

Final version prepared by;		**Date**
Final version placed on intranet website by		**Date**
Intranet address		
Alternative publication methods		

Pilot Process (if applicable)	**Duration**
Not applicable	
Audit of Pilot Process	
Not applicable	
Changes made as a result of pilot process	
Not applicable	

Review

Review date/frequency proposed by Guideline Development Group		**Feb 2006**
Proposed review methodology		
Literature search and multidisciplinary review input.		
Review date and method agreed by relevant approval committee?	**Yes** ☐	**No** ☐
Revised and approved review date or method		
Review completed by		**Date**
Changes to guideline required?	**Yes** ☐	**No** ☐
Revised version prepared by*		**Date**
Revised version placed on intranet website by:		**Date**
Intranet address:		

* Detailed documentation of review of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWI07 001U.

Audit

Audit date proposed by Guideline Development Group		**Date** February 2004	
Proposed audit methodology			
Audit date and method approved by relevant approval committee?		**Yes** ☐	**No** ☐
Revised and approved audit date or method			
Audit completed		**Date**	
Results reported by			
Results reported to			
Changes to guideline required?		**Yes** ☐	**No** ☐
Revised version prepared by*		**Date**	
Revised version placed on intranet website by		**Date**	
Intranet address			

* Detailed documentation of audits of each drug therapy guideline will be undertaken using a new PHPS Form 07 001U in accordance with the requirement of PHPSWI07 001U.

Magnesium Sulphate Intravenous Infusion in Asthma

Introduction

Magnesium is an important cofactor in many enzymatic reactions and is linked to cellular homeostasis. In addition, magnesium has an effect on smooth muscle cells, with hypomagnesemia causing contraction and hypermagnesemia causing relaxation. There is some evidence that when magnesium is infused into asthmatic patients, it can provide additional bronchodilation. In addition, evidence suggests that magnesium may reduce the neutrophilic burst seen with the inflammatory response. [1]

The objectives of this guideline are to provide guidance on the safe administration of intravenous magnesium sulphate in asthma

Indications

- Acute severe asthma in adult patients who have not had a good initial response to inhaled bronchodilator therapy.
- Life threatening or near fatal asthma.

Preparation

- Magnesium sulphate 50% injection (approx. 2mmol/ml) 2ml amp = 1 gram
  5ml amp = 2.5 grams
  10ml amp = 5 grams

Administration
1.2g – 2g magnesium sulphate in 50 ml diluent given over 20 minutes.

Diluents
- Sodium Chloride 0.9%
- Glucose 5%
- Glucose 4% and Sodium Chloride 0.18%

Max rate 150mg/ minute, maximum concentration = 20% magnesium sulphate.

Dose
1.2-2g over 20 minutes

Adverse Effects
Muscle weakness, arrythmias, bradycardia, cardiac arrest, nausea, vomiting, thirst, flushing of skin, hypotension, coma, respiratory depression, confusion, drowsiness, loss of tendon reflexes.

Contra-indications and Cautions

- Avoid in patients with heart block or severe renal impairment[5]
- Caution in less severe degrees of renal impairment and in patients with myasthenia gravis[5]

Monitoring

- Monitor for signs of hypermagnesaemia (see adverse effects above)
- ECG monitoring

Y- site compatibilities

Calcium gluconate, potassium chloride, vancomycin, aciclovir, cefotaxime, dobutamine, gentamicin, heparin, morphine sulphate [3]

Incompatibilities

Amphotericin[3]

Interactions

- Neuro-muscular blockers eg. turbocurarine, suxamethonium, vecuronium,- caution, use with magnesium sulphate can increase their effects.[6]
- Aminoglycosides- caution, use together can result in additive neuromuscular block.[6]
- Calcium channel antagonists – caution, when used together may cause muscular paralysis, as both compounds, working in concert, can reduce the amount of calcium ions needed for normal muscle contraction.[6]

Key National References

British Guideline on the Management of Asthma. The British Thoracic Society and The Scottish Intercollegiate Guidelines Network, Thorax 2003;**58** (Suppl I)

Evidence Base

The British Guideline on the Management of Asthma has been adopted for this guideline. The evidence in the national guideline has been taken from systematic reviews of trials involving large numbers of patients, which showed that Magnesium Sulphate is effective in patients with severe asthma and life threatening or near fatal asthma. Unfortunately there are several weaknesses in this review and other evidence shows conflicting results. More large well designed trials are needed to prove the efficacy of this drug for this unlicensed use.

Helen McHale and Michelle Small Medical Service Pharmacists, Manage this guideline,
See Trust Policy for the Production of Drug Therapy Guidelines
Approved by: Formulary and Medicines Committee Date:March 2003
Ratified by: Date:
Review Date: March 2005