

Health Service Executive South East Acute Hospitals

SOUTH EAST ACUTE HOSPITALS GUIDELINES FOR USE OF RESTRICTED AND RESERVE ANTIMICROBIALS

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Disclaimer:

Each situation must be judged on its own merits and it is unreasonable for readers to follow instructions in the guideline, policy or protocol without proper assessment of individual circumstances. The information contained within this guideline, policy or protocol is the most accurate and up to date, at date of approval.

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1.0 Purpose

A Cochrane review has found that reserving access to selected antimicrobials is the most effective component of any Antimicrobial Stewardship programme.(1) The purpose of this document is to control access to selected antimicrobial agents while

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aiming to improve the use of antimicrobials, reduce unnecessary drug costs and reduce the development of antimicrobial resistance.

2.0 Applies to

These guidelines apply to all healthcare professionals in the South East Acute Hospitals who are responsible for the prescribing, administration, supply and dispensing of antimicrobials. The guidelines do not apply to Paediatrics / Cystic Fibrosis and Haematology/Oncology patients as the complex antimicrobial requirements of these patient groups have been agreed with their individual departments.

3.0 Definitions

Antimicrobial

This is an agent that kills or inhibits the growth of micro-organisms such as bacteria, fungi or protozoans.

Antibiotic

This is an agent that kills or inhibits growth of bacteria.

Antifungal

This is an antimicrobial agent which kills or inhibits the growth of yeasts e.g. *Candida sp.* and/or moulds e.g. *Aspergillus sp.*

Restricted Antimicrobial.

These agents should only be prescribed when they are in line with the recommendations of the current version of "Guidelines for the Use of Antibiotics in Adults, HSE South East Hospitals (2) (up-dated annually) or following discussion with the Clinical Microbiologist.

Reserve Antimicrobial.

These agents should only be prescribed when recommended by a Consultant and following discussion with the Clinical Microbiologist.

Antimicrobial stewardship.

Antimicrobial stewardship includes not only limiting inappropriate use but also optimizing antimicrobial selection, dosing, route and duration of therapy to maximize clinical cure or prevention of infection while limiting the unintended consequences, such as emergence of resistance, adverse drug events, and cost." (3)

Antimicrobial stewardship programme.

This is a systematic approach to optimising antimicrobial therapy, through a variety of structures and interventions (4)

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4.0 Responsibilities

4.1 Prescriber

- It is the responsibility of the prescriber to make the final risk assessment when choosing an antimicrobial. The prescriber should always check prescribing information such as dose, cautions, contraindications, interactions and side effects when considering antimicrobial therapy.
- The prescriber should ensure information on antimicrobial prescribing, including risks and side effects associated with antimicrobial treatment, is available to patients or their legal guardians.
- All prescribers have a responsibility to use antimicrobials in a manner which makes the best use of resources.
- All prescribers have a responsibility to use antimicrobials in a manner, which minimizes the development of antimicrobial resistance and healthcare associated infections.
- The application of this guideline must be modified by professional judgment.

5.0 Procedures

5.1 Introduction

The use and overuse of antimicrobials is associated with the development of antimicrobial resistance. The National guidelines for Antimicrobial Stewardship in Ireland (4) and the IDSA/SHEA guidelines for developing an institutional programme to enhance antimicrobial stewardship (3) recommend the implementation of an Antimicrobial Stewardship Programme to ensure the safe, effective and appropriate use of antimicrobials. A Cochrane review has found that reserving access to selected antimicrobials is the most effective component of any Antimicrobial Stewardship Programme (1).

The likely outcomes associated with antimicrobial stewardship initiatives are, a reduction in cost, a reduction in bacterial resistance and a decrease in *Clostridium difficile*-associated disease (3).

Antimicrobials account for upwards of 30% of hospital pharmacy budgets (5). Several studies have demonstrated that controlling access to certain antimicrobials has resulted in significant reductions in antimicrobial costs. Studies

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have demonstrated significant initial decreases in the use of targeted antimicrobials, with cost savings ranging upwards of \$800,000 (3, 6, 7).

The introduction of a policy controlling access to certain antimicrobials can impact on antimicrobial resistance. Several studies have demonstrated a reduction in resistant gram-negative organisms following introduction (8, 9, 10, 11, 12, 13). A crossover study was conducted in the Netherlands comparing the effect of two different empiric antibiotic regimens in two neonatal Intensive Care Units, demonstrated that policies regarding the use of antibiotics do matter in the control of antimicrobial resistance. The relative risk for colonisation with strains resistant to the empirical therapy per 1000 bed days at risk was 18 times higher for the amoxicillin-cefotaxime regimen compared to the penicillin-tobramycin regimen (11). A prospective study carried out in Boston looking at the impact of their stewardship intervention on microbiological outcomes demonstrated a significant and sustained reduction in resistant enterobacteriaceae cases per 1000 bed days and *Clostridium difficile* associated diarrhoea (CDAD) cases per 1000 bed days. This study did not demonstrate a reduction in Methicillin Resistant *Staphylococcus aureus* (MRSA) or Vancomycin resistant enterococci (VRE) (9). Other studies have demonstrated a sustained reduction in VRE. A study carried out in London in a haematology unit demonstrated a significant reduction in VRE carriage when they replaced ceftazidime with piperacillin-tazobactam. They also demonstrated a significant increase in VRE carriage in the unit when ceftazidime was reintroduced (14). A number of studies have demonstrated a reduction in the incidence of CDAD which was associated with the antimicrobial stewardship intervention (15, 9, 16).

The national Antimicrobial Stewardship Guidelines recommend 'limiting the use of specific antimicrobial agents through restricting availability, restricting use to specified clinical settings, or requiring pre-authorisation by a member of the antimicrobial stewardship team prior to prescribing' (4).

5.2 Access to restricted / reserve antimicrobials

The controlled agents will be dispensed for a limited period of time without authorization; after this time period, authorization by the Antimicrobial Pharmacist/Clinical Microbiologist is required. See appendix 1 for details of how to access the controlled agents.

5.3 Restricted agents

Although these agents may be prescribed, it is recommended that they are only prescribed when it is in line with the recommendations of the current version of the "Guidelines for the use of antibiotics in adults, HSE South East Hospital Network" (updated annually) (2) or following discussion with the Clinical Microbiologist. See appendix 2 for list of agents.

5.4 Reserve agents

Although these antimicrobials may be prescribed, they should only be prescribed when recommended by a Consultant and following discussion with the Clinical Microbiologist. See appendix 3 for list of agents.

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6.0 Dissemination and Implementation plan

This guideline will be implemented with the support of a programme of continuing education, evaluation of the current literature and regular examination of antibiotic susceptibility patterns in the SE Acute Hospitals Network.

7.0 Resource Implications

Inappropriate or incorrect use of antimicrobials may have adverse cost implications.

8.0 Evaluation / Audit

Short period audits with stakeholder feedback will be carried out as part of the hospital Antimicrobial Stewardship Programme.

9.0 Revision History

These guidelines will be reviewed annually with reference to regional antimicrobial resistance data and licensing of new antimicrobial agents. The antimicrobials included in this guideline will be regularly reviewed and approved by the Medicines/Drugs and Therapeutics Committees.

10.0 References

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11.0 Appendices

APPENDIX 1:

Appendix 1A: ACCESS TO RESTRICTED / RESERVE ANTIMICROBIALS IN SLH

ACCESS TO RESTRICTED / RESERVE ANTIMICROBIALS in SLH

(Note: This arrangement does not apply to ICU, ED, MAU, CCU & Paediatric ward)

Ward Request for supply of Restricted / Reserve Antimicrobial

When a patient is started on a Restricted / Reserve antimicrobial the ward must contact pharmacy to order the drug giving

- The ward
- The patient's name
- The patient's L number
- Details of the required antimicrobial i.e. dose, frequency etc.

Out of hours Supply of Restricted / Reserve Antimicrobial:

To prevent a delay in a patient receiving one of these antibiotics if prescribed out of hours, a starting dose of each will be held on Surgical 3. Nursing Administration should then be contacted to obtain subsequent doses from pharmacy.

Exceptions to this are the following restricted antimicrobials: Piperacillin/Tazobactam, ceftriaxone, vancomycin and oral ciprofloxacin. A limited supply of these restricted antimicrobials is kept on all wards in the interest of patient care.

Method of obtaining a supply of a Restricted / Reserve Antimicrobial out of hours from Surgical 3.

1. Introduce yourself to a staff nurse on Surgical 3 and explain that you need a restricted /reserve antimicrobial and ask the for key to the restricted iv antimicrobial cupboard.
2. Open the cupboard and get the required antimicrobial, ONLY take a sufficient amount for one dose.
3. In the stock book inside the cupboard note the ward you have come from, the date, the time, the antimicrobial (name and strength) taken and the quantity (see Appendix 4).
4. Place the stock book back in the cupboard and lock the cupboard.
5. Give the key back to the staff nurse on surgical 3.

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Appendix 1B: ACCESS TO RESTRICTED/RESERVE ANTIMICROBIALS in STGH

ACCESS TO RESTRICTED / RESERVE ANTIMICROBIALS in STGH

(Note: This arrangement does not apply to ICU & Paediatric Ward)

Ward Request for supply of Restricted / Reserve IV Antimicrobial

When a patient is started on a Restricted / Reserve antimicrobial the ward must contact pharmacy to order the drug giving

- The ward
- The patient's name
- The patient's J number
- Details of the required antimicrobial i.e. dose, frequency etc.

Out of hours Supply of Restricted Antimicrobial:

To prevent a delay in a patient receiving one of these antibiotics if prescribed out of hours, a starting dose of each will be held on **Medical 2 and ED Department (for ED use only)**. Nursing Administration should then be contacted to obtain subsequent doses from pharmacy.

Exceptions to this are the following restricted antimicrobials: Piperacillin/Tazobactam, Ceftriaxone and Vancomycin. A limited supply of these restricted antimicrobials is kept on all wards in the interest of patient care.

Method of obtaining a supply of a Restricted Antimicrobial out of hours from Medical 2 .

Please note all wards should obtain their restricted antimicrobials out of pharmacy hours from the restricted antimicrobial cupboard on Medical 2. A separate restricted antimicrobial cupboard will be available in the Emergency Department for use of the Emergency Department only.

1. Introduce yourself to a staff nurse **on Medical 2 Section C** and explain that you need a restricted antimicrobial and ask the Nurse for the key to the restricted antimicrobial cupboard.
2. Open the cupboard and obtain the required antimicrobial, taking only a sufficient amount for one dose. Nursing admin should be contacted in order to obtain subsequent doses from the Pharmacy Department.
3. Please complete the out of hours restricted antimicrobial issue form on the inside of the door detailing the ward you have come from, the date, the time, the antimicrobial (name and strength), indication and the quantity (see Appendix 4).
4. Give the key back to the staff nurse on medical 2.

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Method of obtaining a supply of a Restricted Antimicrobial out of hours from the Emergency Department (For ED use only).

1. Obtain the key for the restriction antimicrobial cupboard from the CNM **and** explain that you need a restricted antimicrobial.
2. Open the cupboard in order and obtain the required antimicrobial, taking **ONLY** a sufficient amount for one dose. Nursing admin should be contacted in order to obtain subsequent doses from the Pharmacy Department.
3. Please complete the out of hours restricted antimicrobial issue form on the inside of the door, detailing the date, the time, the antimicrobial (name and strength), indication and the quantity (see Appendix 4).
4. Give the key back to the staff nurse/CNM in the Emergency Department.

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Appendix 1C: ACCESS TO RESTRICTED/RESERVE ANTIMICROBIALS in WGH

ACCESS TO RESTRICTED / RESERVE ANTIMICROBIALS in WGH

A limited supply of the restricted antimicrobials below will be kept on all wards in the interest of patient care.

Piperacillin/tazobactam
 Ceftriaxone
 Vancomycin
 PO Levofloxacin
 PO Ciprofloxacin

All other restricted / reserve agents will only be stocked in the pharmacy department and must be obtained on a named-patient basis from there.

*** Please note these supply restrictions do not apply to Intensive Care Unit or Accident and Emergency department.

Supply of Restricted / Reserve Antimicrobial during pharmacy opening hours:

When the ward contacts pharmacy to order a restricted / reserve antimicrobial they will be asked to give the patient's name to facilitate follow-up.

Out of hours Supply of Restricted / Reserve Antimicrobial:

If prescribed out of hours, to prevent a delay in a patient receiving one of these antibiotics, Nurse Management should be contacted immediately to obtain sufficient doses from pharmacy to cover until the pharmacy reopens.

Method of obtaining a supply of a Restricted / Reserve Antimicrobial out of hours from Pharmacy.

1. Call nurse management and explain that you need a restricted / reserve antimicrobial from pharmacy.

Nurse management will then:

2. Open the pharmacy and get the required antimicrobial, ONLY taking a sufficient amount to cover until pharmacy reopens. Reserve / restricted status of an antimicrobial will be indicated by a coloured sticker on the product saying "Reserve antimicrobial" or "Restricted antimicrobial".
3. On the after hours/weekend issues record sheet nurse management must record the date, the time, the antimicrobial (name and strength) taken and the quantity, and ward as normal and also the patients name. (See appendix 4)
4. Give the required antimicrobial stock to the requesting ward.

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Appendix 1D: ACCESS TO RESTRICTED/RESERVE ANTIMICROBIALS in UHW

ACCESS TO RESTRICTED / RESERVE ANTIMICROBIALS in UHW

(Note: This arrangement does not apply to ICU, HDU, Paediatric & Haematology/Oncology Wards)

Ward Request for supply of Restricted / Reserve Antimicrobial Agents during pharmacy dept. opening hours:

When a patient is started on a Restricted / Reserve antimicrobial agent, the ward must contact pharmacy to order the drug giving the following details

- The ward
- The patient's name
- The patient's A number
- Details of the required antimicrobial i.e. dose, frequency etc.

Exceptions to this are the following restricted antimicrobial agents: Piperacillin/Tazobactam, Ceftriaxone and Vancomycin. A limited supply of these restricted antimicrobials are kept on all wards in the interest of patient care

Procedure for obtaining a supply of a Restricted / Reserve Antimicrobial Agent when the pharmacy dept is closed, (To be collected by staff nurse grade or member of the Medical Team)

To prevent a delay in a patient receiving one of these antimicrobials, doses of certain antimicrobial agents will be held in cupboards at Orthopaedic 1 and Surgical 7's nursing stations and at the entrance to Medical 3. Nursing Administration should then be contacted to obtain subsequent doses from pharmacy.

1. Introduce yourself to a staff nurse on Orthopaedic 1, Surgical 7 or Medical 3 and explain that you need a restricted/reserve antimicrobial. Ask the nurse for the key to the restricted/reserve antimicrobial cupboard.
2. Open the cupboard and obtain the required antimicrobial agent, taking only a sufficient amount to cover doses until the pharmacy is reopened by nursing administration on Saturday and Sunday or by a pharmacist Monday-Friday
3. In the Out of Hours Supply of Restricted/Reserve Antimicrobials Record Folder, record your name, the ward you have come from, the prescriber's name, the date, the time, the patient's name, the patient's A number, the indication, the antimicrobial agent (name and strength) taken and the quantity (see Appendix 4).
4. Place the Record Folder back in the cupboard and lock the cupboard.
5. Give the key back to the staff nurse on either Orthopaedic 1, Surgical 7 or Medical 3

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Procedure for obtaining a supply of a Restricted/Reserve Antimicrobial Agent for the Emergency Department (Restricted/Reserve antimicrobial agents are to be obtained for ED from the Restricted/Reserve cupboard situated in ED at all times)

1. Obtain the key for the restricted/reserve antimicrobial cupboard situated in ED
2. Open the cupboard and obtain the required antimicrobial, taking ONLY a sufficient amount for one dose
3. In the Supply of Restricted/Reserve Antimicrobials Record Folder, record your name, the prescriber's name, the date, the time, the patient's name, the patient's A number, the indication, the antimicrobial agent (name and strength) taken and the quantity (see Appendix 4).

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APPENDIX 2:

LIST OF RESTRICTED ANTIMICROBIAL AGENTS

Antibacterials

IV Piperacillin/Tazobactam
IV Ceftriaxone
IV /PO Ciprofloxacin
IV/PO Levofloxacin
IV Chloramphenicol
IV/PO Clindamycin
IV Teicoplanin
IV Vancomycin
IV Meropenem
IV Amikacin

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APPENDIX 3:

LIST OF RESERVE ANTIMICROBIAL AGENTS

Antibacterials

IV Cefotaxime
 IV Ceftazidime
 IV Ofloxacin
 IV Colistin
 IV/PO Linezolid
 IV Daptomycin
 IV Tigecycline
 IV Ceftaroline
 IV/PO Fosfomycin
 PO Fidaxomicin
 IV Aztreonam
 IV Cefazolin
 IV Colistin
 IV Ertapenem
 IV/PO Tedizolid
 IV/PO Moxifloxacin

Antifungals

Liposomal Amphotericin B
 Anidulafungin
 Caspofungin
 Voriconazole
 Posaconazole

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APPENDIX 5

Appendix 5A: Dispensing of Restricted / Reserve Antimicrobials in SLH

1. When one of the restricted antimicrobials is ordered from pharmacy either by phone/on a pharmacy list obtain the patient details, name, L number and ward name and fill these details in on the restricted antimicrobial sheet (in the pharmacy).
2. Bleep the Antimicrobial Pharmacist and inform them of the request for the restricted antimicrobial providing the patient's details.
3. The Antimicrobial Pharmacist will review the patient's antibiotics to check if the use of the antibiotic is appropriate and will then give approval to dispense the antimicrobial or not.
4. If approval is given dispense the drug and arrange for it to be sent to the ward.
5. In cases where the Antimicrobial Pharmacist is not available then record all patient details as outlined above but dispense the medication and the Antimicrobial Pharmacist will then follow up on this as soon as they are available.

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Appendix 5B: Dispensing of Restricted / Reserve Antimicrobials in STGH

1. When a restricted or reserve antimicrobial is ordered by a ward either on a pharmacy requisition slip or by phone please detail the following on the restricted/ reserve antimicrobial sheet on the dispensary bench, the date, the patient's name and J number, the ward the patient is on and the restricted/reserve antimicrobial and dose.
2. Bleep the Antimicrobial Pharmacist (#222) and inform them of the request for the restricted antimicrobial providing the patient's details.
3. The Antimicrobial Pharmacist will review the patient's antibiotics to check if the use of the antibiotic is appropriate and will then give approval to dispense the antimicrobial or not.
4. If approval is given dispense the drug and arrange for it to be sent to the ward.
5. In cases where the Antimicrobial Pharmacist is not available then record all patient details as outlined above but dispense the medication and the Antimicrobial Pharmacist will then follow up on this as soon as they are available.

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**Appendix 5C: Dispensing of Restricted / Reserve Antimicrobials in WGH
by pharmacy staff**

1. When one of the restricted antimicrobials is ordered from pharmacy (either by phone or on a pharmacy requisition list) obtain the patient details, name, W number and ward name.
2. Bleep the Antimicrobial Pharmacist and inform them of the request for the restricted antimicrobial providing the patient's details.
3. The Antimicrobial Pharmacist will review the patient's antibiotics to check if the use of the antibiotic is appropriate and will then give approval to dispense the antimicrobial or not.
4. If approval is given dispense the drug and arrange for it to be sent to the ward.
5. In cases where the Antimicrobial Pharmacist is not available then record all patient details as outlined above but dispense the medication and the Antimicrobial Pharmacist will then follow up on this as soon as they are available.

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Appendix 5D: Dispensing of Restricted / Reserve Antimicrobials in UHW
 (Applicable to pharmacy staff during pharmacy opening hours)

1. When one of the restricted/reserved antimicrobials is ordered from pharmacy either by phone/on a ward pharmacy list, obtain the patient's details: Name, A number and Ward name and fill these details in on the restricted/reserved antimicrobial sheet in the pharmacy.
2. Bleep the Antimicrobial Pharmacist and inform them of the request for the restricted/reserved antimicrobial providing the patient's details.
3. The antimicrobial pharmacist will review the patient's antimicrobial agents and check if the use of the antimicrobials is appropriate and will/will not give approval to dispense the antimicrobial
4. If approval is given, dispense the drug and arrange for it to be sent to the ward. The supply is to be labelled with the patient's name and A number **ONLY** on receipt of a prescription and on verification of the prescription by a pharmacist
5. In cases where the antimicrobial pharmacist is not available, record all patient's details as outlined above and supply **ONE DOSE** of the antimicrobial. The antimicrobial agent is to be labelled as "Emergency Supply". Do **NOT** label the antimicrobial agent with the patient's name etc. but do ensure patient details have been entered onto the JAC system. The antimicrobial pharmacist will then follow up on this as soon as they are available.

