

ANTIMICROBIAL STEWARDSHIP - CHW

POLICY AND PROCEDURE[®]

DOCUMENT SUMMARY/KEY POINTS

Note: Information to assist antimicrobial prescribing is available on the Drug Therapy intranet site: http://chw.schn.health.nsw.gov.au/o/groups/drug_therapy/resources/antibiotic_approval.php

Antimicrobial stewardship is defined as processes to assist and support clinicians with decisions regarding the optimal selection, dose and duration of an antimicrobial agent. The objective is to ensure the best clinical outcome for the treatment or prevention of infection, with minimal toxicity to the patient and minimal impact on subsequent resistance development.

The Antimicrobial Stewardship Policy has three main goals:

- Improved patient care
- Decreased pressure for the development of multi-resistant organisms
- Decreased drug acquisition costs.

To enable a system of antimicrobial stewardship the antimicrobial agents have been placed into one of 4 groups.

- **Red agents** are those requiring mandatory approval (unless exemptions apply) by the Antimicrobial Stewardship Consultant on pager before use or (if after hours) within 1 working day.
- **Orange agents** are those where approval must be obtained by online registration the next working day for continued use.
- **Yellow agents** will be notified by pharmacy to the Antimicrobial Stewardship Consultant who will ensure that the medical team is comfortable with the use of the agent.
- **Green agents** have no restrictions.

If use of a red or orange agent is supported by a recent laboratory report of susceptibility to that agent it will be considered approval for use and no further action by the clinical team would be required. One exception to this principle is for airway isolates from Cystic Fibrosis patients, since hierarchical antibiotic reporting rules are not applied to these isolates.

Exceptions are in place for use of drugs under Drug Committee pre-approved protocols and where patient safety is paramount e.g. presumptive meningitis.

The roles and responsibilities of staff members are provided.

Approved by:	SCHN Policy, Procedure & Guideline Committee	
Date Effective:	1 st November 2016	Review Period: 1 year
Team Leader:	Head of Department	Area/Dept: Microbiology

CHANGE SUMMARY

- MoH are updating their guidelines. Once these are released, SCHN will update. 1 year extension of mandatory review period

READ ACKNOWLEDGEMENT

- All clinical staff who prescribe antibiotics should read and acknowledge this policy.

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TABLE OF CONTENTS

Background	4
Application of Antimicrobial Stewardship	5
Red Agents	6
Orange Agents	6
Yellow Agents	7
Green Agents	8
Antimicrobial approval process – Guidelines for Medical staff	9
<i>RED Agents with no exemption:</i>	<i>9</i>
<i>RED Agents where exemptions may apply:</i>	<i>9</i>
<i>ORANGE Agents with no exemption.....</i>	<i>10</i>
<i>ORANGE Agents where exemptions may apply</i>	<i>10</i>
<i>Outpatient Prescribing and Discharge Scripts.....</i>	<i>11</i>
<i>Microbiology Report.....</i>	<i>11</i>
<i>YELLOW Agents.....</i>	<i>11</i>
<i>GREEN Agents.....</i>	<i>11</i>
Roles and Responsibilities	12
References.....	13

Background

CHW has experienced new antimicrobial resistance problems in the previous years, vancomycin resistant enterococci (VRE) in the oncology unit and carbapenem-resistant (metallo-beta-lactamase, MBL-producing) coliforms in the liver transplant, intensive care and oncology units. In addition, we have ongoing extended spectrum beta-lactamase (ESBL) endemicity in Intensive Care and Oncology units. The affected areas are clearly those where antimicrobial selection pressure is heavy.

The term “antimicrobial stewardship” refers to processes designed to ensure prudent, effective, appropriate, safe and (ideally) evidence-based antimicrobial use. It may encompass features including education, feedback, restriction, or electronic prescribing systems. There are 3 main reasons why an antimicrobial may require “stewardship”: High resistance potential (e.g. cephalosporins), high cost (e.g. antifungals) or high complexity of use (e.g. ribavirin, anti-HIV drugs). Effective antimicrobial “decision support” or “stewardship” has several possible benefits^{1,2}. The first (and most important) is to improve clinical care by ensuring that the most appropriate antimicrobial agents are given for the appropriate duration by the appropriate route. The second is reduced pressure for the emergence and spread of multiply resistant organisms due to inappropriate broad spectrum antimicrobial use. The third is to reduce drug acquisition costs. Additional benefits may include better education of prescribers, and encouragement for units to develop and submit evidence-based antimicrobial use protocols^{3,4}.

The NSW Health Policy Directive, [Infection Control Policy: Prevention and management of Multi-resistant Organisms \(MRO\)](#) (PD2007_084) summarises the key features expected of an institutional stewardship program:

- Protocols for antibiotic use must be consistent with the Therapeutic Guidelines – Antibiotic
- Access to specific broad spectrum agents should be restricted to prevent overuse, resistance selection and excess cost
- Prescribing policies should be established under the Drug and Therapeutic Committee
- Criteria for the use of restricted agents should be reviewed at least annually
- Usage of restricted agents should be monitored regularly
- Prescribing should be improved by a combination of strong leadership, education and training, evidence-based protocols, audit and feedback, and the streamlining of therapy on the basis of positive culture results

Application of Antimicrobial Stewardship

A hierarchical system of stewardship of different antimicrobial agents based on resistance potential, complexity of use (toxicity, interactions, monitoring requirements) and cost has been developed:

- **“Red”** agents (mostly high cost and/or resistance potential);
- **“Orange”** agents, with intermediate grounds for concern;
- **“Yellow”** agents, usually agents with other complexities such as drug interactions or difficult pharmacokinetics or monitoring requirements.
- **“Green”** agents are those where there are no restrictions on use.

Provision will be made for the commencement of antimicrobials in life-threatening situations (e.g. meningitis) without approval, particularly after hours, but continued use of such restricted agents beyond the next working day will still require approval. A list of “exemptions” to these approval requirements, based clearly on evidence-based indications for these agents, has been developed. Note that where “unit protocol” exemptions are listed, that exemption is subject to review of the protocol by the Stewardship Service and/or Drug and Therapeutics Committee. Proposed exemptions should be explicit and objective, so that they can be adjudicated by a clinical pharmacist without review by the Stewardship Consultant in most instances.

The Antimicrobial Stewardship consultant will be designated on a rotating roster drawn from the Infectious Diseases Consultants. They can be contacted through the switchboard or on pager 7092.

The list of current exemptions as approved by the Drug Committee will be maintained by the Antimicrobial Stewardship Pharmacist.

Red Agents

Red Agents	
(approval via pager 7092 required prior to use, or if after hours on the next working day)	
Amikacin	Imipenem/Cilastatin
Amphotericin B liposomal (Ambisome)	Linezolid
Aztreonam	Meropenem
Caspofungin	Moxifloxacin
Cefepime	Quinupristin/dalfopristin
Ciprofloxacin	Ribavirin
Ertapenem	Tigecycline
Flucytosine (5-FC,5-Fluorocytosine)	Valaciclovir
Foscarnet	Valganciclovir
Ganciclovir	Voriconazole
Posaconazole	

Orange Agents

Orange Agents	
(initial empiric use allowed, approval provided within 24-48 hours)	
Aciclovir Intravenous	Fusidate sodium
Atovaquone	Itraconazole suspension or caps
Atovaquone + proguanil	Miltefosine (SAS)
Azithromycin	
Cefotaxime	Nitazoxanide (SAS)
Ceftriaxone	Paromomycin (SAS)
Ceftazidime	Piperacillin/Tazobactam (Tazocin)
Chloramphenicol Intravenous (SAS)	Rifampicin
Clarithromycin	Teicoplanin
Colistin (Polymyxin B)	Ticarcillin/clavulanate (Timentin)
Doxycycline IV (SAS)	Tobramycin
Fluconazole	Vancomycin
Clindamycin Intravenous	Outpatient antibiotic infusers or syringes

Yellow Agents

Yellow Agents (alert list, not formally restricted)	
Abacovir (S100)	Lopinavir (S100)
Aciclovir oral	Mefloquin
Albendazole	Mebendazole
Amantadine	Neomycin (oral)
Amphotericin B Deoxycholate	Nelfinavir (S100)
Atazanavir (S100)	Nevirapine (S100)
Benzathine Penicillin (SAS)	Oseltamivir
Chloroquine	Pentamidine
Cidofovir (S100)	Praziquantel
Dapsone (100mg Tabs is SAS)	Primaquine
Darunavir (S100)	Pyrimethamine
Delavirdine (S100)	Pyrazinamide (SAS)
Diadanosine (S100)	Quinine dihydrochloride
Efavirenz	Rifabutin
Emtricitabine (S100)	Ritonavir (S100)
Enfuvirtide (S100)	Saquinavir (S100)
Ertavirine (S100)	Stavudine (S100)
Ethambutol	Sodium Stibogluconate
Fosamprenavir (S100)	Sulfadiazine
Griseofulvin	Sulfadoxine / pyrimethamine
Indinavir (S100)	Tenofovir (S100)
Isoniazid	Tripanavir (S100)
Ivermectin	Zalcitabine (S100)
Lamivudine (S100)	Zanamivir
Lamivudine + Zidovudine (S100)	Zidovudine (S100)
Maraviroc	Raltegravir

Green Agents

Green Agents (not formally restricted)	
Amoxicillin	Miconazole Topical
Amoxicillin/clavulanate (Augmentin)	Minocycline
Ampicillin	Nitrofurantoin
Cefaclor	Nystatin topical
Cephalexin	Penicillin G (Benzylpenicillin)
Cephazolin	Penicillin V (Phenoxymethylpenicillin)
Clindamycin PO	Procaine Penicillin
Clotrimazole (topical)	Pyrantal
	Roxithromycin
Doxycycline	Terbinafine
Erythromycin	
Flucloxacillin	Tinidazole
Gentamicin	Trimethoprim,
Metronidazole	Trimethoprim/sulfamethoxazole
Lincomycin	Mupirocin

Antimicrobial approval process – Guidelines for Medical staff

Detailed information to assist antimicrobial prescribing is available on the Hospital intranet: refer to the Drug Therapy site:

http://chw.schn.health.nsw.gov.au/o/groups/drug_therapy/resources/antibiotic_approval.php

The following procedures will expedite the timely provision of restricted antimicrobials to hospital patients. Contact for approval is to be via Antimicrobial Stewardship Pager: 7092

RED Agents with no exemption:

8.30am to 5pm:

Call stewardship pager (7092) prior to prescription of any agent on the hospital's "RED" list. Once approved, antibiotic should be charted on patient medication chart. The prescription should include approval number (when available) and the date for review as directed by the Stewardship Consultant. Requests for extension beyond the nominated date of review should follow the same process.

*Approval for use will be recorded on the Hospital intranet Antimicrobial site **by the Antimicrobial Stewardship Consultant.***

After Hours:

Agent to be charted and sufficient stock will be provided until noon on the next working day. Prior to dispensing further supplies, the prescriber will be contacted and asked to seek approval for continued use of the restricted agent. An ongoing supply will be provided when all appropriate documentation is provided. (Approval number and date for review).

Requests for extension beyond the nominated date of review should follow the same process.

RED Agents where exemptions may apply:

The indication for use must be documented on the medication chart in order to prevent delays in the dispensing of an antimicrobial agent.

8.30am to 5pm:

Antimicrobial is to be charted on medication chart. If exemption criteria are met, no further steps need to be taken – medication will be forwarded to the appropriate ward. Requests for approval to be logged via the [intranet restricted antibiotic site](#).

- For indications outside the approved exemptions, the prescriber will be contacted by ID consultant/pharmacist for further clarification prior to approval.

*Approval number and date for review are to be written on medication chart **by the requesting prescriber.***

After Hours:

Agent to be charted and sufficient stock will be provided until noon on the next working day. Requests for approval to be logged via the [intranet restricted antibiotic site](#).

- If exemption criteria are met, no further steps need to be taken – medication will be forwarded to the appropriate ward.
- For indications outside the approved exemptions, the prescriber will be contacted by ID consultant/pharmacist for further clarification prior to approval.

*Approval number and date for review are to be written on medication chart **by the requesting prescriber.***

ORANGE Agents with no exemption

8.30am to 5pm:

Request for this group of antimicrobials should be logged via [intranet restricted antibiotic site](#) as soon as possible after prescribing. Pharmacy will supply sufficient stock for 24 hours and will prompt teams regarding guidelines for use of these agents. Approval will be provided electronically within 24 hours.

Approval number and date for review are to be written on medication chart as soon as possible after approval granted.

After Hours:

Agent to be charted and sufficient stock will be provided until noon on the next working day. Request for this group of antimicrobials to be logged via [intranet restricted antibiotic site](#) as soon as possible after prescribing. On first working day following prescribing, Pharmacy will supply sufficient stock for 24 hours and will prompt teams regarding guidelines for use of these agents. Approval will be provided electronically within 24 hours.

Approval number and date for review are to be written on medication chart as soon as possible after approval granted.

ORANGE Agents where exemptions may apply

*The indication for use **must** be stated on the medication chart.*

8.30am to 5pm:

Request for this group of antimicrobials should be logged via [intranet restricted antibiotic site](#) as soon as possible after prescribing.

- Pharmacy will prompt teams regarding guidelines for use of these agents. Approval will be provided electronically within 24 hours.
- If exemption criteria are met, no further steps need to be taken – medication will be forwarded to the appropriate ward.
- For indications outside the approved exemptions, the prescriber will be contacted by ID consultant/pharmacist for further clarification prior to approval.

Approval number and date for review are to be written on medication chart as soon as possible after approval granted by the requesting prescriber.

After Hours:

Agent to be charted and sufficient stock will be provided until noon on the next working day. Request for this group of antimicrobials to be logged via [intranet restricted antibiotic site](#) as soon as possible after prescribing. Approval will be provided electronically within 24 hours. On first working day following prescribing, Pharmacy will supply ongoing stock and will prompt teams regarding guidelines for use of these agents.

If exemption criteria are met, no further steps need to be taken – medication will be forwarded to the appropriate ward.

For indications outside the approved exemptions, the prescriber will be contacted by ID consultant/pharmacist for further clarification prior to approval.

Approval number and date for review are to be written on medication chart as soon as possible after approval granted by the requesting prescriber.

Outpatient Prescribing and Discharge Scripts

Approval for use of antimicrobials on the RED list with no exemptions should be gained prior to writing prescription and giving to patient for dispensing.

- Call Stewardship pager.
- Approval number and length of treatment are documented on the prescription.

Gaining approval in the first instance will reduce patient waiting times at pharmacy as contact with the team will need to be made prior to dispensing.

Outpatient prescriptions for antimicrobials on the RED list where exemptions apply, should clearly state indication for use and length of treatment required. Where exemption criteria are appropriate, prescription will be dispensed as required. Where exemption criteria are inappropriate, the medical team will be contacted for clarification and further information.

Approval for use of antimicrobials on the ORANGE list with no exemptions should be gained in advance of discharge by logging request via intranet antibiotic site. Script should have both approval number and length of treatment specified before delivery to pharmacy. For emergency/outpatients/unanticipated discharges, contact stewardship pager for approval.

Approval for use of antimicrobials on the ORANGE list where exemptions apply should contain indication for use and length of treatment required. Where exemption criteria are appropriate, prescription will be dispensed as required. Where exemption criteria are inappropriate, the medical team will be contacted for clarification and further information.

Microbiology Report

If use of a RED or ORANGE agent follows reported by the laboratory for a specific isolate within the previous two weeks then that will be considered approval for use and no further action by the clinical team would be required.

One exception to this principle is for airway isolates from Cystic Fibrosis patients, since hierarchical reporting rules are not applied to these isolates.

YELLOW Agents

These agents will be notified by pharmacy to the Antimicrobial Stewardship Consultant if prescribed who will ensure that the medical team is comfortable with the use of the agent.

GREEN Agents

These agents have no restrictions however the Antimicrobial Stewardship Consultant may be notified by pharmacy if there is concern about the use of these agents. The Antimicrobial Stewardship Consultant may contact the medical team if deemed necessary

Roles and Responsibilities

The success of the Antimicrobial Stewardship Program will be dependent on the coordinated activity of many professional groups of hospital staff. The program will need designated staff to provide management for the program and the strong support of the Hospital administration to implement this policy.

The program plans to provide a framework for accountability for the use of antimicrobial agents to ensure:

1. Best patient care,
2. Decreased pressure driving antimicrobial resistance and
3. Reduced costs where possible.

The Chief Executive Officer, through the Director of Finance, is responsible for ensuring sufficient resources to implement and maintain the program. The Chief Executive Officer will be the final arbiter for individual patient use where the cost of therapy is the main reason for stewardship.

The Director of Clinical Operations, through the Program Chairs, is responsible for ensuring implementation of the policy.

The Drug Committee is responsible for ratifying CHW antimicrobial formulary choices and protocols and policies regarding antimicrobial usage.

The ADONs, who obtain restricted antimicrobials after hours, will ensure that the use of these agents is registered in the antibiotics approvals database.

The Microbiologists are responsible for providing accurate information about bacterial identification and antimicrobial sensitivities to guide antimicrobial therapy.

The Infectious Disease Physician, who is the Antimicrobial Stewardship Consultant, is responsible for providing antimicrobial stewardship advice to clinicians. The advice will be in the form of agent(s) to use and duration of approval. They will register this information in the antibiotics approvals database. Any discrepancy which cannot be resolved will be referred to the Executive for arbitration.

The Antimicrobial Stewardship Pharmacist is responsible for monitoring and encouraging compliance with the antimicrobial stewardship program with daily review and follow-up of after-hours use of restricted agents. Any discrepancies will be referred to the Antimicrobial Stewardship Consultant for review and discussion with the patient care team. They may also place a removable sticker in a patients drug chart to alert teams to the review date (approval expiry date) of a restricted agent.

The Head of Pharmacy is responsible for ensuring that pharmacy staff is aware of the antimicrobial stewardship program and for the dispensing of antimicrobials in accordance with this program. They will ensure after hours availability of restricted antimicrobials for emergency use with facility for follow up on the next working day. If a discrepancy or dispute about antimicrobial use cannot be resolved it will be referred to the Antimicrobial Stewardship Consultant for review and discussion with the patient care team.

The Heads of Departments, particularly specialty units, are responsible for the development and maintenance of evidence-based antimicrobial treatment protocols which will be submitted to the CHW Drug Committee and the Antimicrobial Stewardship Service for review. Approved protocols will usually become the basis of “exemptions” to the stewardship system, thus lessening the compliance burden both for clinical teams and for the Stewardship Service.

The Medical Staff is responsible for ensuring that they comply with this policy and obtain approvals and register their use of antimicrobials.

Ward Pharmacists are responsible for alerting medical teams that a prescribed antimicrobial is restricted. They may also place a removable sticker on the drug chart to alert teams as to the review date (approval expiry date) of a restricted agent.

References

1. Infectious Diseases Society of America (2007) Guidelines for developing an institutional program to enhance antimicrobial stewardship. Clin Infect Dis 44; 159-177.
2. MacDougall C and Polk RE (2005) Antimicrobial stewardship programs in health care settings. Clin Micro Reviews. 18; 638-656.
3. Carling et al (2003) Favourable impact of a multidisciplinary antimicrobial management program over 7 years. Hosp Inf Cont. 24; 699-708.
4. Ruttiman (2004) Long term antibiotic cost savings from a comprehensive intervention program in a medical department of a university-affiliated teaching hospital. Clin Infect Dis 38;349-356.

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