

BACKGROUND

Antimicrobial resistance is a growing problem and every drug prescription used (appropriately or inappropriately) exerts pressure. The benefit gained from the use of a drug must be weighed against the impact on overall drug resistance. Using the narrowest agents for shortest period of time to adequately treat the infection is the ideal. In general, the broader the agent used, the bigger the effect on resistance.

In the acutely unwell patient requiring empirical treatment a broad spectrum is often needed to cover the potential causative pathogens. However, there are certain agents that are more problematic than others and have greater propensity to lead to resistance in general often to more than one class of antimicrobial (e.g. quinolones, third generation cephalosporins). Other agents are vulnerable to the development of resistance but of great use, therefore should be retained for use when truly needed (e.g. rifampicin).

Employing an antimicrobial formulary is one part of an antimicrobial stewardship programme. Such programmes have been shown to have beneficial effects on reducing and restricting antimicrobial resistance (ref) and form an important part of the [Guidelines for the control of multi-drug resistant organisms in New Zealand](#) (MOH website).

The Restricted Antimicrobials List complements the antimicrobial guidelines, which offer suggestions for first (and allergy-related second) choices for most common conditions. This should be the first resource used when selecting an agent. General principles on selecting the appropriate agent should always apply:

- Does the patient need an antibiotic?
- What am I treating?
- What organisms do I need to cover?
- Have I collected appropriate specimens to make a microbiological diagnosis?
- By which route should the drug be administered?
- Are there any special circumstances to take into account (e.g. immunosuppression, allergy etc)?
- What duration should treatment be given for – IV? Oral?

A restricted formulary is not designed to prevent all use of restricted agents or prevent freedom of clinical judgement rather to safeguard our limited supply of antimicrobials for long term future use.

Restricted agents are not banned but use of such a drug requires discussion with a member of the Infection Team (Infectious Diseases (ID) Physician or Clinical Microbiologist) which should provoke debate, education and, where necessary and timely, clinical consultation on the patient. Where an alternative agent is preferable this should be used, but where the restricted drug is appropriate its use will be endorsed.

Clearly such a service cannot be sustained in a hospital out of hours (OOH) – *after hours, weekends and public holidays* - and patient safety demands a fallback position for such situations. Therefore any Consultant can authorise initiation OOH but ongoing use is to be reviewed and authorised by a member of the Infection Team when one is next available on duty.

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Review Date: Dec 2016	Version No: 5	
Protocol Steward: Infectious Diseases Physician	Authorised by: Medical Director	

The Restricted Antimicrobials List details which agents can be used following discussion with a Consultant OOH. It is felt that, given the complex or severe nature of any case requiring consideration of such an agent, a discussion with a senior staff member is appropriate. Some agents are restricted to use on the advice of the Infection Team only (which would include use indicated by isolation of an organism, but it is hoped that even in these cases specialist infection control help would be sought).

Antimicrobial resistance is a moving field and the current decisions have been based on current susceptibilities of our most common pathogens. This is updated on a regular basis and may be quite different to other places that you have worked before so if you're not sure what is appropriate please check what is recommended or seek advice.

The Restricted Antimicrobials List details what drugs are available and under what restriction. Where it states "no-one exempt" endorsement of a member of the Infection Team must be sought in order to use that agent. Where use has been endorsed, the name of the endorsing consultant must be entered into the Medication chart with the name of the medication. Unendorsed prescriptions will not be supplied by Pharmacy. The fraudulent endorsement of prescriptions is a disciplinary offence.

This process is constantly evolving and open for debate. If any individual feels a drug is inappropriately restricted they are welcome to raise their objection with the Infection Team / Pharmacy and it will be fully considered on the basis of the available evidence, local susceptibility patterns and recognised best practice.

The Restricted Antimicrobials List is intended to be protective rather than punitive and open the way for discussion, education and appropriate specialist involvement.

The following agents are readily available for use:

<i>Penicillins</i>	Benzympenicillin (IV), penicillin V (oral), amoxicillin (IV and oral), augmentin (amoxicillin + clavulanic acid, oral and IV), flucloxacillin (IV and oral)
<i>Cephalosporins</i>	1 st generation - cefazolin (IV), 2 nd generation - cefuroxime (IV), cefaclor (oral)
<i>Macrolides</i>	Erythromycin (IV and oral), roxithromycin (oral)
<i>Lincosamides</i>	clindamycin (oral – IV use restricted due to excellent bioavailability of oral preparation)
<i>Tetracyclines</i>	doxycycline (oral)
<i>Nitrofurantoin</i>	(oral)
<i>Aminoglycosides</i>	gentamicin (IV) (as single dose only, then consult ID)
<i>Sulphonamides / antifolates</i>	cotrimoxazole (IV and oral), trimethoprim (oral)
<i>Nitroimidazoles</i>	metronidazole (IV and oral, consider need for IV as oral prep has excellent bioavailability)

Any agents not on either of the above or Restricted Antimicrobials List are not generally available.

Infection Team	
<i>ID Physicians</i>	<i>Clinical Microbiologists</i>
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ASSOCIATED DOCUMENTS

- Bay of Plenty District Health Board policy 7.1.1 Medications, IV Fluids and Standing Orders
- Bay of Plenty District Health Board policy 4.1.11 Antibiotics and Antimicrobials
- Bay of Plenty District Health Board policy 4.1.11 protocol 2 Antibiotics and Antimicrobials - Antibiotic Recommendations for Common Conditions in Adults
- Bay of Plenty District Health Board policy 4.1.11 protocol 4 Antibiotics and Antimicrobials - Orthopaedic Surgery - Recommendations for Pre-operative Antibiotic Prophylaxis
- Bay of Plenty District Health Board policy 4.1.11 protocol 5 Antibiotics and Antimicrobials - General Surgery - Recommendations for Pre-operative Antibiotic Prophylaxis
- Bay of Plenty District Health Board policy 4.1.11 protocol 6 Antibiotics and Antimicrobials - Surgical Specialties - Recommendations for Pre-operative Antibiotic Prophylaxis
- Bay of Plenty District Health Board Medications protocol MED.G3.1 Gentamicin
- Bay of Plenty District Health Board Medications protocol MED.V5.1 Vancomycin (IV and Oral)
- Bay of Plenty District Health Board Restricted Antimicrobials List

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