Clinical Practice Guideline

HUNTER NEW ENGLAND
NSW HEALTH

Area antimicrobial guideline

Document Registration Number:

Sites where CPG applies	Acute Networks Hospitals Primary & Community Network Inpatient facilities
Target Clinical Audience	All clinicians
Applicability ***NB: *Please be aware that young people between 16 and 18 years of age may have a number of other guideline, policy or legal requirements that should be adhered to but for the purposes of guideline development can be considered adult**	*(Please indicate with a X in the appropriate box)* Neonate – less than 29 days N Children up to 16 years* √ Adult (18 years and over) √ All of the above □
Summary	This document describes expert recommendations relating to antimicrobial selection and use. These guidelines apply to all inpatient facilities managed by Hunter New England Health Service.
Keywords	Antibiotic, Antibiotic Guideline, Aminoglycoside, Gentamicin, Pneumonia, Meningitis, *Staphylococcus aureus*, Surgical prophylaxis, Antimicrobial, Sepsis, Splenectomy
Replaces existing clinical practice guideline or policy?	Yes
Registration Numbers of Superseded Documents	HNE 06/15-42
Related documents (Policies, Australian Standards, Codes of Conduct, legislation etc)	
NSW Health Policy Directive 2005_247: Infection Control Policy (Circular 2002/45) Therapeutic Guidelines: Antibiotic, Edition 14, Therapeutic Guidelines, Melbourne, Victoria 2010	
Clinical Network/stream leader responsible for CPG	
Consultation with key stakeholders	• Directors of Medical Service • HNE Infectious Disease Physicians • Medical Microbiologists (HAPS) • Clinical Pharmacy Services • John Hunter Quality Use of Medicines Committee • Intensive care stream • Emergency stream • Kaleidoscope • Surgical Stream • Key clinical leaders • Divisions of Medicine (Tamworth, JHH and Mater Hospitals)
Review Due Date:	2012 (after release of Edition 15 of Therapeutic Guideline: Antibiotic)
Contact Person Responsible	
Contact Details	
Date Authorised by HNE Clinical Quality and Patient Safety Committee	Area Quality Use of Medicines Committee December 2010
Portfolio Executive Director responsible for CPG	

Executive Summary

This guideline is an expert statement prepared by the HNE Antimicrobial Working Party and the Immunology and Infectious Diseases Stream.

It describes measures to promote appropriate antimicrobial use in HNE inpatient facilities focusing on:

- promoting adherence to good prescribing practice (See AIMED principles below) and Therapeutic Guidelines: Antibiotic
- promoting adherence to local clinical practice guidelines for management of sepsis, pneumonia and staphylococcal bacteraemia
- infectious disease syndromes for which obtaining expert advice from the Infectious Diseases or Clinical Microbiology Services is advised
- strategy for clinical pharmacists to support AMS process
- strategy for IV to Oral antimicrobial conversion
- provision of appropriate and effective surgical prophylaxis
- safe use and monitoring of aminoglycosides
- appropriate management of splenectomised patients
- measurement of the usage of key broad-spectrum antimicrobial agents across all HNE facilities and practical strategies to reduce usage
- measurement of antimicrobial resistance

For specific advice regarding antimicrobial and clinical management of an infectious disease case, please contact the on-call Infectious Diseases Physician via tel 02 49213000.

Glossary

Acronym or Term	*Definition*
TGC	Third generation cephalosporin
AIMED	5 principles of good antimicrobial prescribing practice
VRE	Vancomycin resistant enterococcus
MRSA	Methicillin resistant *Staphylococcus aureus*
CIAP	Clinical Information Access Program. Accessible by HNEAHS intranet
C3	Component of the complement cascade
NHMRC	National Health and Medical Research Council
Area AWP	Area antimicrobial working party - Subcommittee of the Area Quality Use of Medicines Committee
ACHS	The Australian Council on Healthcare Standards
AQUM	Area Quality Use of Medicines Committee
AMS	Antimicrobial stewardship

1 Rationale

The overuse of broad spectrum antimicrobials, including the third and fourth generation cephalosporins (TGC), is strongly linked to the emergence and outbreaks of multi-resistant organisms (eg. vancomycin resistant enterococci (VRE), multi-resistant Gram negative bacteria, methicillin resistant *Staphylococcus aureus* (MRSA)) and an increase in the incidence of opportunistic pathogens such as *Clostridium difficile*.

2 Responsibility

The following groups and individuals have responsibility for promoting adherence to these guidelines:

- Area Quality Use of Medicines Committee (AQUM)
- Area Antimicrobial Working Party (a subcommittee of AQUM)
- Acute Hospital Networks Quality Use of Medicines/Drug Committees
- Infectious Disease Physicians
- Clinical Microbiologists
- Clinical Pharmacists

HNE Acute Networks and Cluster Managers are responsible for distribution of this guideline to Heads of Clinical Units.

Pharmacists
A generic ISBAR process around pharmacist Antimicrobial Stewardship intervention is provided in Appendix 2 as a suggested approach.

Annual Operational plan for Antimicrobial Stewardship
The Area Antimicrobial Working Party produces an annual operational plan for AMS that is endorsed by AQUM. This is available at:
http://intranet.hne.health.nsw.gov.au/hne_infection_prevention__and__control/infectious_diseases,_immunology_and_anti-infective_resources.

3 Guidelines

3.1 Antimicrobial use in the Hunter New England Health Service should follow the *Therapeutic Guidelines, Antibiotic* Current Edition unless there are particular clinical or microbiological reasons for deviation.

3.1.1 HNE Acute Hospital Network Managers and Cluster Managers should facilitate access to the current edition of the Therapeutic Guidelines by clinical staff by providing secured (ie. indelibly marked) paper copies in each inpatient ward and Emergency Department.

3.1.2 The HNE intranet includes a link to the Therapeutic Guidelines: Antibiotic via the NSW Health CIAP site or via http://proxy9.use.hcn.com.au/

3.1.3 Specific Hunter New England Clinical Practice Guidelines, consistent with TG:Antibiotic exist for the following clinical situations:

- Acute adult pneumonia (community and healthcare-associated) (2010)
- Fever and Sepsis in adults (2010)
- *Staph. aureus* blood-stream infection (adults)

- Surgical antimicrobial prophylaxis and trauma orthopaedics (adults and children)
- Management of cellulitis in adults by Hospital in the Home services

These guidelines are available on the HNE intranet at: http://ppg.hne.health.nsw.gov.au/

Aminoglycosides - see below; previous Clinical Practice Guideline has been discontinued. Recent communiqué from AQUM is appended (Appendix 3).

3.1.4 NSW Paediatric Emergency Department Clinical Practice Guidelines and Hunter New England Pathways and Policy Compliance procedures: http://www.nchn.org.au/clinical_guidelines.htm

3.2 **Infectious Disease advice**: consultancy advice on clinical and antimicrobial treatment is available at all hours from the on-call HNE Infectious Diseases Service (call 49213000 and page ID registrar or consultant).

3.3 **Infectious Diseases consultant advice should be obtained for all patients with:**

- Infective spinal discitis/osteomyelitis
- Infected joint replacements (early or late)
- Bacterial meningitis (suspected or proven)
- Bacterial or culture negative endocarditis
- *Staph. aureus* blood stream infection

3.4 **Medical Microbiologist advice**: consultant advice on antimicrobial selection and dosing, antimicrobial susceptibility of usual pathogens, infection control and laboratory investigation of infectious diseases is available from the on-call Hunter Area Pathology Medical Microbiologist or the Microbiology Registrar (49214000).

3.5 **Acute Networks Hospital formularies** should implement categorisation of antimicrobial agents into one of three categories: unrestricted access, restricted access in accordance with specified criteria and agents that are precluded from use except in exceptional circumstances. Recommended indications for restricted antimicrobial agents are provided by the HNE Restricted Anti-infective Clinical Practice Guideline (http://intranet.hne.health.nsw.gov.au/__data/assets/pdf_file/0009/67365/HNEH_CG_10_06_Restricted_Anti_infective_Indications.pdf).

3.6 A I M E D: 5 principles of good antimicrobial prescribing practice

These elements should be explicitly considered with every prescription of an antimicrobial. Antimicrobial therapy **AIMED** at improving patient outcomes.

	Principle	Rationale
1	**Antimicrobial selection and dosage** should be compliant with guideline recommendations (Therapeutic Guidelines: Antibiotic as default). Variance should be justified. **Allergy** to antimicrobial(s) must be assessed prior to prescription	Non-compliant practices abound, frequently leading to excessive use of broad spectrum agents that are more prone to drive emergence/selection of antimicrobial resistance. Guidelines also specify correct dosing, another neglected issue with potential to drive resistance. Allergy assessment is frequently neglected and potentially causes risk for adverse events.
2	**Indication for treatment** should be documented.	There should be good justification for prescribing in every patient. Avoid antimicrobial use in illness likely to be self-limited or of minor degree.
3	**Microbiological assessment** - always consider and collect necessary specimens PRIOR to administration of the first antimicrobial dose	Where possible, antimicrobial therapy should be directed against a demonstrated microbial cause of the infection. The corollary is that microbiological results must be available where practical to guide therapy or to support treatment cessation/de-escalation decisions (see 4. below).
4	**Evaluate at 48-72hrs**: assess whether antimicrobial treatment needs to be modified (de-escalation).	At this time point, patients who are receiving empiric therapy can be assessed to determine clinical progress, revised or confirmed diagnosis and results of initial microbiology. The options then are three-fold: • cease treatment (non-infective diagnosis made, negative microbiology) • de-escalate IV treatment to a defined period of oral treatment (patient improving, afebrile, no other ongoing indication for parenteral treatment) and/or • direct parenteral/oral therapy against a demonstrated pathogen that is thought to be causing the illness)
5	**Duration or review date** should always be specified.	Excessive durations of antimicrobial therapy represent further risk for emergence / selection of antimicrobial resistance and occurrence of adverse events. • For most indications, short and sharp treatment courses work best. • Surgical prophylaxis when indicated should usually consist of one pre-operative dose. • For intensive care patients or post-operative patients, always document a treatment plan (duration, agent(s) and dosage).

3.7 **Diagnosis of sepsis and empiric antimicrobial therapy (refer also to HNE Sepsis and Fever Clinical Practice Guideline)**:

Key principles include:

- **Collect at least two blood culture sets** from patients with presumed sepsis prior to starting antimicrobials. There is no need to wait more than 10-15 minutes between sets but they should be from separate venipunctures. In an adult, ensure that each set comprises 2 bottles inoculated with a maximum of 10 mL of aseptically collected blood.
  It is NOT recommended to collect blood for culture via a pre-existing central venous or arterial line unless there has been a direction by the supervising Haematologist or Oncologist or as a last resort.
- **Give prompt empiric antimicrobial therapy (severe sepsis- preferably within 1 hour of triage)** at an appropriate dose based on Therapeutic Guidelines: Antibiotic, HNE guidelines (3.4) and/ or consultant advice (3.6, 3.7, 3.8 below).
- **Review patient status at 48 hrs** in the light of microbiological culture results. Options include:
  - Cease antimicrobials (cultures negative, infection considered unlikely or non-infective or non-bacterial infective diagnosis made)
  - Change antimicrobials to target a demonstrated pathogen (directed therapy) and if possible, establish a duration for treatment
  - No change (cultures negative, diagnosis uncertain). Consider obtaining Infectious Disease consultant advice.

3.8 Aminoglycoside dosing and usage

See this section of Therapeutic Guidelines, Current Edition for specific advice
http://proxy9.use.hcn.com.au/tgc/abg/7823.htm

An AQUM Communique on aminoglycosides was issued in October and is in Appendix 3.

The majority of aminoglycoside recommendations in the Therapeutic Guidelines are now for **empiric therapy** (with gentamicin). To obtain maximal benefit and to minimise toxicity, the guidelines now recommend **a maximum of 48 hours of empiric therapy** (ie a maximum of 3 doses in patients with normal renal function - at 0, 24 and 48 hours). Susceptibility results should be used to guide ongoing therapy. If susceptibility results are not available by 72 hours, gentamicin should be stopped and an alternative regimen used. **For this short-term empirical therapy, monitoring of plasma concentrations is not required.** Pharmacists will review patients to ensure that empiric therapy is not inadvertently continued beyond the 48-hour cut-off. Charts will be annotated with "**Cease or Review**" to prompt action by prescribers.

3.9 SWITCH to oral, CEASE or CONSULT?

Early consideration of oral therapy potentially increases patient satisfaction, reduces need for hospitalisation and reduces cost. Appendix 5 provides an outline of a recommended approach in a poster form. Local sites should consider strategies that reduce unnecessary parenteral use.

Note that for the following antimicrobials, oral bioavailability is such as to render no advantage to parenteral treatment. Always switch to oral as soon as possible once gut functioning is observed.

- azithromycin
- ciprofloxacin
- lincomycin (use oral clindamycin as the oral agent)
- metronidazole (can also be administered by rectal suppository)

3.10 **Usage of antimicrobial agents (quinolones, third and fourth generation cephalosporins)** at all hospital sites is monitored quarterly. This data is to be tabled at Hospital QUM/Drug committees, Immunology/ID Stream and at the Area Antimicrobial Working Party. Usage exceeding thresholds specified below should be examined by local Pharmacy Services in consultation with the Area AWP. A range of Area-wide strategies that address usage of these agents will be implemented in 2011 (see Area Antimicrobial Stewardship Operational Plan 2011 on intranet). For indications for use of these agents, see 3.5 above. Current usage figures to end September 2010 are in Appendix 6.

3.11 **Splenectomised or hyposplenic patients**: these patients have significant lifetime risk of severe sepsis. In an Australian study, the reported incidence was 0.42 per 100 person-years[1]. Another study showed that the percentage of patients who develop sepsis post-splenectomy was 3.2%[2] (4.4% in children <16 years and 0.9% in adults)[3] . Case series suggest that the increased risk is life-long. The overall mortality of post-splenectomy sepsis is 40-50%. Children tend to present with meningitis and adults are more likely to present with septicaemic illness. Patients with absolute complement C3 deficiency should also be considered functionally asplenic.

Management involves:

- Immunisation (preferably prior some weeks prior to splenectomy) - see current edition of the NHMRC Immunisation Guidelines
- Assessment of post splenectomy antimicrobial prophylaxis requirement focusing on those at highest risk (as per Therapeutic Guidelines: Antibiotic http://proxy9.use.hcn.com.au/tgc/abg/4585.htm):
  - Children under 5 years if age who are asplenic or suffering from sickle cell anaemia
  - For at least 3 years following splenectomy
  - Patients with severe underlying immunosuppression
  - At least 6 months after an episode of severe sepsis in an asplenic patient
- Reserve/standby antibiotic supply held by patient
- Patient education/advice
- Medi-alert bracelet

[1] Cullingford G, Watkins D, Watts A, Mallon D. Severe late post-splenectomy sepsis. Br J Surg 1991. 78; 716-721
[2] Bisharat N, Omari H, Lavi I, Raz R.. Risk of infection and death among post-splenectomy patients. J of Infect. 2001 43 (3) 182-186
[3] Holdsworth R, Irving A, Cuschieri A.. Post-splenectomy sepsis and its mortality rate; actual versus perceived risks. Br J Surg 1991, 78; 1031-38

For detailed advice, consult the Australian Society for Infectious Diseases guidelines available at:
http://intranet.hne.health.nsw.gov.au/__data/assets/pdf_file/0003/54597/ASID_Splenectomy_Guidelines_2008.pdf

A small patient information card is also made available at this location (see Appendix 1). This card is available on the Patient Discharge system as a pdf document.

4 Outcome

Note: The current results for each of these indicators will be archived on to:
http://intranet.hne.health.nsw.gov.au/hne_infection_prevention__and__control/infectious_diseases,_immunology_and_anti-infective_resources.

It is recommended that Hospital QUM/Drug Committees monitor utilisation of antimicrobial agents by auditing:

- Immunology & Infectious Diseases Stream indicators - total hospital usage of cephalosporins (third and fourth generation), quinolones (norfloxacin, ciprofloxacin and moxifloxacin) and glycopeptide antimicrobial usage (as detailed above), benchmarked with published rates.

- Appropriateness of usage of particular agents (Drug-Usage Evaluation Service), usually done by audit of patients who present with a particular clinical syndrome

- Compliance with aminoglycoside dosing and monitoring guidelines (Pharmacy Services)

- Surgical prophylaxis in elective surgery auditing against the Area Surgical Prophylaxis recommendations -periodic review that examines:
    - timing of initial dose (target within 30 minutes of induction)
    - choice of agent (target as per HNE guideline)
    - duration of post-operative doses if given (target maximum 24 hrs post operative)

- Incidence rates of infections due to hospital-acquired MRSA (collated by the Hospital Infection Control Practitioner(s) and reported to the ACHS 6-monthly (February and August)

- Incidence rates of hospital-acquired *Clostridium difficile* infection (Infection Prevention and Control Service; reported monthly to NSW Health from July 2010).

Appendix 1: Pharmacist ISBAR Process for Stewardship Intervention

These steps are especially relevant for Clinical Pharmacists (CP) who are at HNE facilities without an on-site Microbiology or ID specialist.

1. Understand that this HNE Guideline specifies that it is policy to follow Therapeutic Guidelines: Antibiotic

2. Understand and have access to the HNE Restricted Anti-infective CPG

3. Establish a mechanism for alerting the CP as soon as a patient is prescribed a restricted anti-infective (can be done with an electronic system but that then needs invigilation to ensure all usage captured)

4. The CP should individually review the patient to determine compliance with Area policy.

5. If the prescribed use is outside a valid indication or if the information insufficient, the CP should contact the prescriber - using the ISBAR format for the communication with the prescriber-

- **Introduction** - I am the CP for xx hospital and have been given responsibility for monitoring antimicrobial use in this hospital
- **Situation** - Your Patient Y has been prescribed Z for uncertain reason(s).
- **Background** - The Area Health Service defines Z as a restricted a/m and there are specific defined indications for its use.

Ask for a brief patient history and the prescriber's justification for use of the antimicrobial.

- **Assessment** -The usage of Z appears to be outside the defined indications. OR Given the circumstances, your choice is reasonable.
- **Recommendations** - options include:
    - agreement that use is within policy requirement - document approval
    - comment on dosage/mode of administration if relevant
    - provide an alternative recommendation based on therapeutic Guidleines: Antibiotic and document whether clinician agrees
    - recommend discussion of case with the oncall Infectious Diseases/Microbiology person - provide name and number.
    - escalation to Director of Medical Services or the Infectious Diseases Physician if the prescriber is resistant to advice

6. The CP follows up recommendations to see that they are implemented and documents the outcome

7. The CP provides a summary report of usage and interactions with prescribers to the Facility Drug/Therapeutics Committee

Appendix 2: AQUM Communique Aminoglycosides (October 2010)

Aminoglycoside

Area QUM Committee Communiqué

ISSUED: October 2010

Introduction
Dosage and monitoring recommendations for gentamicin and other aminoglycosides have changed (August 2010). Please consult Therapeutic Guidelines: Antibiotic, Edition 14, Appendix 3 (via CIAP) for specific advice or contact Infectious Diseases (49213000) or the Duty Microbiologist (49214000).

Situation
The majority of aminoglycoside recommendations in the Therapeutic Guidelines are for **short course empirical therapy** (with gentamicin). To maximise clinical outcomes and to minimise the potential for toxicity, a maximum of 48 hours of empirical therapy (ie a maximum of 3 doses in patients with normal renal function - at 0, 24 and 48 hours) is recommended. For this short-term empirical therapy, monitoring of plasma concentrations is not required.

Every empirical gentamicin recommendation is now accompanied by a caveat stating that susceptibility results should be used to guide ongoing therapy.
If susceptibility results are not available by 72 hours, gentamicin should be stopped and an alternative regimen prescribed.

Background
The rapid bactericidal activity of the aminoglycosides and their comparatively low levels of resistance in most pathogens mean that they are very useful empirical drugs when a serious Gram-negative infection is suspected.

Assessment
There are now only a few circumstances when aminoglycosides are recommended for **directed therapy**. These include:

- low doses (gentamicin 1 mg/kg 8-hourly) as synergistic treatment for streptococcal and enterococcal endocarditis
- combination therapy for serious *Pseudomonas aeruginosa* infections in cystic fibrosis and some other respiratory patients
- brucellosis (a rare occurrence in Australia)

In most of these cases, Infectious Diseases advice should be sought.
For directed therapy: once-daily or less frequent dosing, monitoring should commence after the first dose to guide subsequent dosing. Computerised monitoring methods are recommended.

Recommendation
Institution of short term empirical therapy

- Initial dose: based on age
- Number of empiric doses: based on renal function
- NO monitoring is required for patients receiving short course empiric therapy (ie. 3 doses or less)

Recommended gentamicin and tobramycin starting doses:

Patient age	Initial dose
< 10 years	7.5 mg/kg up to 320 mg
10 – 29 years	6 mg/kg up to 560 mg
30 – 60 years	5 mg/kg up to 480 mg
> 60 years	4 mg/kg up to 400 mg
>10 years with severe sepsis (*sepsis syndrome*)	7mg/kg up to 640mg

Adult doses: these should be rounded to the nearest 40mg increment

Recommended dosing interval:

Creatinine clearance (mL/min)	Dosing interval	Maximum number of empiric doses
> 60	24 hrs	3 (at 0, 24 and 48 hours)
40 – 60	36 hrs	2 (at 0 and 36 hours)
30 – 40	48 hrs	2 (at 0 and 48 hours)
< 30	Give initial dose once, then seek expert advice	

The **dosing interval** for subsequent empirical dosing is based on the patient's renal function, since elimination of aminoglycosides is by renal excretion. Empiric therapy should be charted in the regular section of the NIMC with days blocked out as below to prevent >3 doses being administered

An important role for pharmacists could be to ensure that empirical therapy is not inadvertently continued beyond the 48-hour cut-off.

References: 1. Therapeutic Guidelines ® 14th Edition

Appendix 3: Communique Community-acquired pneumonia in adults

Community Acquired Pneumonia

Area QUM Committee Communiqué

ISSUED: October 2010

Situation

With the release of Therapeutic Guidelines: Antibiotic 14th Edition, the HNE Health Community Acquired Pneumonia Clinical Practice Guideline therapeutic recommendations have changed. Updates of the Guidelines will soon be available via the intranet and The ED Pathway will also be updated to reflect the changes. Small card guides are now available

Background

Correct management of community-acquired pneumonia (CAP) improves patient outcomes.
Important aspects of management include:

- **Clinical assessment** to identify unusual risk exposures
- **Severity assessment** using the **CORB** (Confusion, Oxygenation, Respiratory rate, Blood pressure) scoring at presentation (use the worst parameters recorded for each during the ED stay or first 24 hrs) to identify patients with severe pneumonia. CORB can also be used to assess patients with influenza-like illness. Presence of two or more CORB criteria is sufficient to indicate presumptive severe pneumonia[1].
- **Early commencement of antibiotic therapy**
- **Investigation of patients with severe pneumonia** to demonstrate an infective cause that enables later targeting of antibiotic therapy

Assessment

Doxycycline or a macrolide (oral clarithromycin or IV azithromycin) is used in pneumonia to treat atypical organisms such as *Mycoplasma pneumoniae*, *Chlamydophila (Chlamydia) pneumoniae* and *Legionella* species.

These drugs are also active against *Streptococcus pneumoniae*, but because of increasing resistance they should only be used as monotherapy in patients with mild community-acquired pneumonia (CAP), and an alternative drug used if treatment fails.

For more severe CAP, combination with a betalactam antibiotic is recommended[2].

Recommendations

Medical Officers be aware of the changes to the HNE Community Acquired Pneumonia Guidelines

NB: Only clarithromycin 250mg tablets are currently available through the PBS (14 tablets) + 1 repeat. Many Emergency Departments will only keep 250mg tablets as imprest stock. Clarithomycin 500mg tablets are only available via SAS and are much more costly.

Adult Community-acquired Pneumonia — Hunter New England NSW Health

Criterion	First line	Pen.allergy[2]
Mild Social supports OK Stable co-morbidities No CORB factor	amoxycillin 1 g oral 8-hrly, 5-7 days	clarithromycin 250 mg oral 12-hrly, 5-7 days
Moderate One CORB factor OR Requires admission *(may still require ICU assessment)*	benzylpenicillin 1.2 g IV 6-hrly, 7 days AND doxycycline 100 mg oral 12-hrly, 7 days OR clarithromycin 500 mg oral 12-hrly, 7 days	ceftriaxone[2] 1 g IV daily, 7 days AND doxycycline 100 mg oral, 12-hrly 7 days OR clarithromycin 500 mg oral 12-hrly, 7 days
Severe/ICU/HDU[1] Adult with ≥ 2 of: **C** Confusion: new onset pO_2 < 60mm or O_2 sat ≤90% **R** RR ≥30/min **B** P syst.< 90mmHg or diast. ≤60mm	benzylpenicillin 1.2 g IV 4-hrly AND gentamicin daily IV *(see doses over)* AND azithromycin 500 mg IV/oral daily	ceftriaxone[2] 1 g IV daily AND azithromycin 500 mg IV/oral daily *(usually stop azith. at 3 days if legionella unlikely)*

Investigation (severe): acute serology, two blood culture sets, urinary *Legionella* and *Pneumococcal* antigens, NPA or sputum for extended respiratory virus PCR and *Legionella* PCR.

Notes: [1] If MSSA or MRSA pneumonia probable, **consult Infectious Diseases** and **add vancomycin**: CrCl > 90 mL/min: 1.5 g IV 12-hourly (maximum infusion rate 10 mg/min). Do trough level only if therapy > 48hrs (target 12-18 mg/L).
[2] **Immediate β-lactam hypersensitivity: consult Infectious Diseases.**

Ref: CPG on intranet
Expires Dec 2012

Empiric gentamicin IV dosing (TG: Antibiotic, Edition 14)
Number of doses (calculate creatinine clearance):
CrCl > 60 mL/min: dose at 0, 24, 48 hr then cease
40-60 mL/min: dose at 0 and 36 hr then cease
30-40 mL/min: dose at 0 and 48 hr then cease
< 30 mL/min: dose once only, then seek advice.

NO levels required for empiric dosing

Recommended dose (round to nearest 40mg):
Child < 10 yr: 7.5 mg/kg to max 320 mg | 10-29 yr: 6 mg/kg to max 560mg
30-60 yr: 5 mg/kg to max 480 mg | > 60 yr: 4 mg/kg to max 400mg

Do NOT use if previous vestibular or auditory toxicity or serious hypersensitivity (rare) due to aminoglycosides.

Small card guides can be ordered from the Drug Usage Evaluation Service:
Paula.Doherty@hnehealth.nsw.gov.au

References:

1. HNE Health Adult CAP Clinical Practice Guideline
2. Therapeutic guidelines: Antibiotic 14th Edition

Appendix 4: Switch, Cease Consult Poster

Antibiotic Therapy

HUNTER NEW ENGLAND
NSW HEALTH

SWITCH to oral, CEASE or CONSULT?

SWITCH: IV antibiotic to an oral agent?

- Patient is showing clinical improvement and no existing ID recommendations for continued IV
- Temperature < 38^{O}C for 2 consecutive days
- Oral fluids & food tolerated
- No ongoing or potential absorption problems
- No unexplained tachycardia
- A suitable oral formulation is available

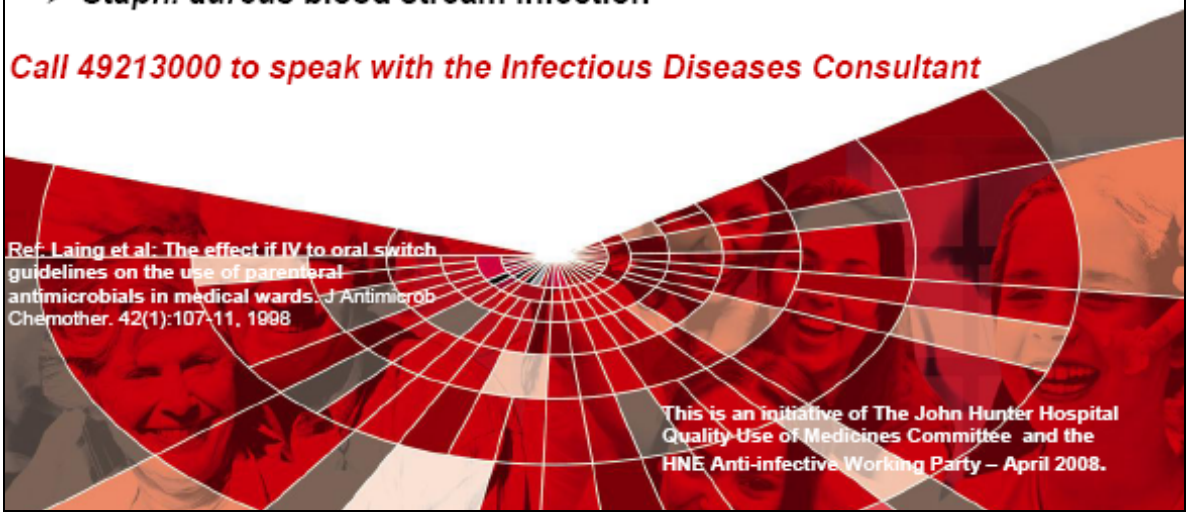
CEASE: has infection proven to be unlikely?

- Evaluate current clinical status, diagnosis and initial investigations

CONSULT: Does your patient have an infection requiring complex consideration, prolonged IV therapy or with a likelihood of relapse?

- Infective spinal discitis/osteomyelitis
- Infected joint replacements (early or late)
- Bacterial meningitis (suspected or proven)
- Bacterial or culture negative endocarditis
- *Staph. aureus* blood stream infection

Call 49213000 to speak with the Infectious Diseases Consultant



Ref: Laing et al: The effect if IV to oral switch guidelines on the use of parenteral antimicrobials in medical wards. J Antimicrob Chemother. 42(1):107-11, 1998

This is an initiative of The John Hunter Hospital Quality Use of Medicines Committee and the HNE Anti-infective Working Party – April 2008.

Appendix 5: Splenectomy Patient Information Card

Please do not lose this record

Date of Splenectomy: _____

Immunisation Record

Pneumococcal vaccine:

Type _____ Date _____
Type _____ Date _____
Type _____ Date _____
Type _____ Date _____

Meningococcal vaccine:

Type _____ Date _____
Type _____ Date _____
Type _____ Date _____
Type _____ Date _____

Haemophilus vaccine:

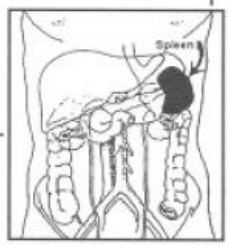
Type _____ Date _____

Health Care Interpreter Service

A free and confidential interpreter service is available, 24 hours, seven days a week.
Ask the staff to arrange an interpreter for you.
(02) 9840 3456

Adapted from model provided by Wentworth Health Service
Oct 2006 HNE Infectious Diseases

Important facts about your splenectomy



HUNTER NEW ENGLAND
NSW HEALTH

What is the Spleen?

The spleen is part of the body's defence system against infections. It produces antibodies which help protect the body from certain types of bacterial infection. It can also remove bacteria from the blood stream during infection.

Why is the spleen removed?

The spleen may be removed for a variety of reasons:

- certain blood disorders
- if it is injured in a fall or motor vehicle accident
- in conjunction with stomach or bowel surgery

Caring for your health after your splenectomy?

Although the spleen is not a vital organ, it does protect your body against infections. Once you have had your spleen removed it is important to **be aware that you are at higher risk of infection**. There are things you should do.

Consult your doctor early if you think you might be getting an infection. In this way any treatment needed can be started as soon as possible before infection becomes more serious.

Important facts to remember:

- Because you have had your spleen removed, you are more likely to get certain infections.
- You should be offered immunisation against pneumococcal, meningococcal and haemophilus influenzae type b infection before leaving hospital.
- Revaccination with pneumococcal and meningococcal should be discussed with your doctor.
- Revaccination with haemophilus influenzae type b vaccine is not currently recommended.
- Infection following dog bites may be particularly severe after splenectomy.
- Anti-malaria precautions are particularly important if you are travelling to malaria risk areas.
- You should consult a doctor early for any illness accompanied by fever.
- You should inform all doctors and dentists that you have had a splenectomy.
- Your doctor may decide additional precautions, such as taking regular antibiotics are advisable.
- You should wear a Medic-Alert bracelet showing you have had a splenectomy.

Appendix 6: Immunology/Infectious Diseases Stream Antimicrobial Usage data to end September 2010

Red indicates usage currently above target benchmark.

	Fluoroquinolones Bench mark < 30DDD/1000 bed-days			3rd and 4th Generation Cephalosporins Bench mark < 20DDD/1000 bed-days		
	Jan-Mar 10	**Apr-Jun10**	**Jul-Sep 10**	**Jan-Mar 10**	**Apr-Jun10**	**Jul-Sep 10**
Sites participating in NAUSP						
JHH	60	49	49	27	26	22
Tamworth RRH	31	38	36	39	29	37
Armidale RRH	38	42	46	76	100	85
Manning RRH	32	33	15	33	29	34
Maitland RRH	82	76	62	63	55	37
Belmont DH	31	42	26	29	20	29
CMNH (non-onc)	22	58	87	42	54	41
District Hospitals						
Cessnock	16	10	23	17	15	17
Kurri Kurri	17	32	13	1	6	11
Singleton	12	23	22	34	23	27
Tomaree	5	15	17	59	36	44
Gloucester	16	-	18	5	8	26
Scone	4	11	12	8	7	7
Muswellbrook	10	6	8	17	22	24
Quirindi	56	34	36	4	3	-
Gunnedah	22	26	15	17	13	28
Narrabri	6	17	8	12	5	10
Moree	16	1	11	32	20	18
Inverell	12	19	23	19	30	28
Glen Innes	21	2	4	26	30	32

3.0 IMPLEMENTATION PLAN

The Antimicrobial WP is responsible for overseeing implementation. An operational plan for 2011 that includes implementation approaches for all major areas of endeavour has been tabled at Area level and finalised. See intranet for details-
http://intranet.hne.health.nsw.gov.au/hne_infection_prevention_and_control/infectious_diseases,_immunology_and_anti-infective_resources

4.0 EVALUATION PLAN

1. The Immunology & Infectious Diseases Stream and AWP will receive updated reports on progress against the outcome indicators.

5.0 REFERENCES

Therapeutic Guidelines: Antibiotic, Therapeutic Guidelines, Edition 14, Melbourne, Victoria 2010

6.0 CONSULTATION LIST

- Infectious Diseases and Immunology, HAPS Microbiology
- Intensive Care Stream
- Emergency Department Stream
- Area Quality Use of Medicines Committee
- Antimicrobial Working Party
- Area Healthcare Quality Committee