

# ANTIMICROBIAL STEWARDSHIP IN KNH: LESSONS LEARNT

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# Antimicrobial stewardship

- Antimicrobial stewardship programs in hospitals seek to optimize antimicrobial prescribing in order to
  - ▣ improve individual patient care
  - ▣ reduce hospital costs
  - ▣ slow the spread of antimicrobial resistance
- **Overarching role is to change and direct antimicrobial use at a health care institution**

# Antimicrobial Stewardship

- Define what the institution considers appropriate antimicrobial use
  - ▣ Physicians acquire their antimicrobial prescribing habits from
    - colleagues,
    - recommendations of antibiotic handbooks,
    - information provided by medical representatives
  - ▣ Risk of contributing to antimicrobial resistance was rated lowest among seven factors that influence a physician's choice of antimicrobial agent

# AMS Programs and Strategies

- **Education and Guideline Implementation Strategies**
- **Formulary and Restriction Strategies**
- **Review and Feedback Strategies**
- **Antibiotic Cycling Strategies**
- **Computer-Assisted Strategies**

# Attributes of an AMS program

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- Leadership
- Scope
- Ownership
- Location
- Tools
- Implementers
- Review and feedback

# Leadership: AMS STRUCTURE

Medical Advisory Committee

Medicine & Therapeutics  
Committee

IPC

Formulary  
subcommittee

M& E  
subcommittee

Antimicrobial  
Stewardship  
subcommittee

Policies and  
protocols  
ADHOC  
committees

# Leadership: AMS



**PHYSICIAN CHAMPIONS**

**PHARMACY**

**INFECTION PREVENTION AND CONTROL**

**MICROBIOLOGY**

**NURSING**

**DOCTORS FROM DIFFERENT DISCIPLINES**

# Terms of Reference

- To collate input from Clinical departments and develop antimicrobial protocols
- Monitor, report and disseminate antimicrobial susceptibility patterns in the hospital.
- To give regular updates to the KNH Medicines and Therapeutics Committee



# Meetings

- Monthly: Last Friday of each month
- Agenda:
  - ▣ Set out by secretariat
  - ▣ Meet regularly
- Report
  - ▣ Included in each MTC meeting

# Review and Feedback

- Involves retrospective review of antimicrobial orders
  - ▣ if an order appears to be inappropriate, a member of the antimicrobial management team contacts the prescriber in an effort to optimize therapy
  - ▣ Involves reviews by
    - ▣ Clinical Pharmacist
    - ▣ Infectious Disease specialist

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# Outputs



# THE KNH GUIDE TO ANTIMICROBIAL THERAPY IN CRITICAL CARE UNITS



*First Edition  
2014*

This guideline has been developed by a multidisciplinary team comprising medical specialists, microbiologists, clinical pharmacists, infection prevention and control specialists and the medicine and therapeutics committee.

The hospital antibiogram has been used to identify the most common pathogens and profile their antimicrobial susceptibility patterns. Application of this guide will enhance appropriate antimicrobial selection and high standard of patient care in Critical Care Unit.

The guide does not apply to all patients uniformly. The choice of antimicrobials may be modified in special groups such as pregnant and lactating mothers, renal and hepatic dysfunction, recent antimicrobial therapy, history of hypersensitivity and the presence of significant drug interactions.

The changes in the local antibiogram and new recommendations on antibiotic use will inform the periodic revision of this guide.

It is our intention that this guide provides a prototype upon which other antimicrobial protocols will be developed.

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# Good practice on antimicrobial use

- Ensure that appropriate dose is prescribed; if uncertain consult the clinical pharmacist or check in the hospital formulary.
- The need for antimicrobial therapy should be reviewed regularly.
- For most infections 5 to 7 days of antimicrobial therapy is sufficient.
- Once culture reports are available, the physician shall step down to the narrowest spectrum, most efficacious and most cost effective option. If there is no step down available, the reason shall be documented for clinical audit.

# Good practice on antimicrobial use

- Appropriate investigations are recommended for all infections. These are necessary for diagnosis, treatment and follow up.
- Microbiological samples should be collected before initiating antimicrobial therapy.
- The hospital formulary is to be used while choosing antimicrobial therapy.
- Check for factors that will affect drug choice and dose such as renal and hepatic dysfunction, drug interactions and hypersensitivity reactions.



## Patient risk stratification

- Category One** No contact with healthcare system in the last 90 days, no prior antibiotic treatment in the last 90 days, patient young with no co-morbidities and no organ failure.
- Category Two** Patient with recent hospital admission without invasive procedure, recent exposure to antibiotic, ward transfers, other hospital transfer in, patient old with co-morbidities and/or one organ failure.
- Category Three** Patient who has long hospitalization with invasive procedure, recent and multiple antibiotic therapies, advanced HIV/AIDS, Neutropenia, other severe immune-suppression and more than one organ failure.
- Category Four** Patient unresponsive to antibacterial agents consider adding a systemic antifungal agent (*See table 7*)

# Bloodstream infections

	Category 1	Category 2	Category 3
Patient risk stratification	<p>No contact with health care system</p> <p>No prior antibiotic treatment</p> <p>Patient young with no co-morbidities</p> <p>No organ failure</p>	<p>Recent hospital admission, dialysis etc. without invasive procedure</p> <p>Recent antibiotic therapy</p> <p>Patient old with co-morbidities</p> <p>Single organ failure</p>	<p>Long hospitalization</p> <p>With Invasive procedures</p> <p>Recent and multiple antibiotic therapies</p> <p>Advanced immunodeficiency</p> <p>Neutropenia,</p> <p>Multiple organ failure</p>
Common Pathogens	<p><i>Staphylococcus aureus</i>, Coagulase-negative staphylococcus, <i>Escherichia coli</i></p>	<p><i>Escherichia coli</i>, <i>Klebsiella</i>, <i>Enterobacter</i>, <i>Citrobacter</i></p>	<p><i>Acinetobacter*</i>, <i>Pseudomonas</i>, <i>Escherichia coli</i>, <i>Klebsiella</i>, <i>Enterobacter</i>, <i>Citrobacter</i></p>
Empiric Therapy	<p>Coamoxiclav</p> <p>+/-</p> <p>Aminoglycoside</p>	<ul style="list-style-type: none"> <li>▪ Ertapenem</li> <li>or</li> <li>▪ Ciprofloxacin</li> </ul>	<p>Full spectrum Carbapenem (Imipenem or Meropenem) + Amikacin</p> <p>or</p> <p>Piperacillin/Tazobactam + Amikacin **</p>

# Bloodstream infections

## After culture and susceptibility testing

Pathogen	Recommended	Alternative	Remarks
<i>Staph. aureus</i> MSSA	<ul style="list-style-type: none"> <li>Flucoxacillin</li> </ul>	<ul style="list-style-type: none"> <li>Coamoxiclav</li> </ul>	
<i>Staph. aureus</i> MRSA	<ul style="list-style-type: none"> <li>Vancomycin or Teicoplanin</li> </ul>	<ul style="list-style-type: none"> <li>Linezolid</li> </ul>	
Coagulase negative Staphylococci	<ul style="list-style-type: none"> <li>Flucloxacillin</li> </ul>	<ul style="list-style-type: none"> <li>Coamoxiclav</li> </ul>	Mostly a skin contaminant.
Enterococcus	<ul style="list-style-type: none"> <li>Vancomycin or Teicoplanin</li> </ul>	<ul style="list-style-type: none"> <li>Linezolid</li> </ul>	
Escherichia coli, Klebsiella, Citrobacter and other Enterobacteriaceae	<ul style="list-style-type: none"> <li>Ciprofloxacin</li> </ul>	<ul style="list-style-type: none"> <li>Ertapenem</li> </ul>	For ESBLs use Ertapenem
Pseudomonas	<ul style="list-style-type: none"> <li>Ceftazidime + Aminoglycoside</li> </ul>	<ul style="list-style-type: none"> <li>Piperacillin/Tazobactam + Aminoglycoside or Cefepime + Aminoglycoside</li> </ul>	Ciprofloxacin may be used in place of Aminoglycosides in patients with renal dysfunction .
Acinetobacter	<ul style="list-style-type: none"> <li>Piperacillin/Tazobactam or Cefepime or Imipenem or Meropenem + Amikacin</li> </ul>		For MDR Acinetobacter use Colistin or Tigecycline

# Challenges

- **What influences acceptability of guidelines**
  - Ownership: the degree of local input in development
    - Compliance with national guidelines is poor
  - Adaptation of national guidelines to local circumstances
  - broad dissemination of guidelines in easily accessible forms (print and/or electronic),
  - active educational methods

# Challenges

- Complexity of KNH systems:
  - Prescribers
    - Levels
    - As a teaching site
  - Patient stratification
  - Medicines
- Dissemination

# *Implementers*

- Embrace antibiotic stewardship
- Improve antibiotic use
  - ▣ improve individual patient outcomes,
  - ▣ reduce the overall burden of antibiotic resistance,
  - ▣ save healthcare costs.
- Make appropriate antibiotic use a quality improvement and patient safety priority.
- Focus on reducing unnecessary antibiotic use

# *Implementation*

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- Collaborate with each other and with patients
- Talk to your patients about appropriate use of antibiotics.
- Work with pharmacists to counsel patients on appropriate antibiotic use, antibiotic resistance, and adverse effects.

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