HEALTH HOLDING

HAFER ALBATIN HEALTH CLUSTER
MATERNITY AND CHILDREN HOSPITAL

Department:	Pharmaceutical Care		
Document:	Multidisciplinary Policy and Procedure (MPP)		
Title:	Antimicrobial Stewardship Program		
Applies To:	All Pharmacists, IPC Staff, Microbiologist and Physicians		
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1. PURPOSE:

1.1 To provide a process governing the Antimicrobial Stewardship Program (ASP) and proper antimicrobial prescribing and intervention.

2. DEFINITIONS:

2.1 **Antibiogram**: summarizes the cumulative proportions of pathogenic organisms that are susceptible to particular antimicrobials. This provides a profile of the susceptibilities of specific pathogenic bacteria to antimicrobial agents as tested in routine clinical microbiology practice.

2.2 **Antimicrobial Stewardship Program (ASP)** refers to a systematic approach to optimizing antimicrobial therapy through a variety of structures and interventions. ASP promotes 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 the emergence of resistance, adverse drug events, and unnecessary costs.

2.3 **The Antimicrobial Stewardship Team (AST)** is a hospital-based team of experts in the field of infectious diseases responsible in monitoring the appropriateness of antimicrobial usage, composed of, but is not limited to the following:

- 2.3.1 Consultant, Infectious Diseases Consultant
- 2.3.2 Clinical Pharmacists/ Pharmacists
- 2.3.3 Infection Control Preventionist/ Coordinator
- 2.3.4 Representative from the Microbiology Department

2.4 **An Antimicrobial Stewardship Committee (ASC)** is a standing committee responsible for reviewing all Drug Formulary management requests related to antimicrobial agents; wherein the composition includes physicians and pharmacists specialized in the field of infectious diseases.

2.5 **Clinical Pathway** refers to a multidisciplinary standardized plan of care that describes the course of events in the treatment of patients with similar problems with specific time line, incidents/actions/interventions that must take place and resources that should be used to achieve desired, standardized outcomes.

2.6 **Defined Daily Dose (DDD)** is the assumed average maintenance dose per day for a drug used for its main indication in adults.

3. POLICY:

3.1 It is a priority for MCH to improve the use of antimicrobial agents with the establishment of an ASP, which resides within the hospital's highest quality improvement and patient safety department, as well as, the hospital's quality and safety strategic plan.

3.2 The development of antibiotic guidelines and the associated clinical pathways/protocols must be in accordance with the existing hospital standards, policies, and procedures for improving the appropriate use of antibiotics.

- 3.2.1 The antimicrobial guidelines must be reviewed and updated annually by the AST or any other existing committee competent to address antimicrobial agents.

3.2.2 The associated clinical pathways are based on internationally accepted standards of practice and clinical practice guidelines that incorporates relevant standards of care, protocols, and procedures.

3.2.3 The associated clinical pathways must include disclaimer and waiver of liability statements that the recommendations given by AST are meant to serve as guidelines only and not intended to replace good clinical judgment and the ASP assumes no responsibility for any injury or damage resulting from the reliance thereof.

3.3 The ASC in each hospital monitors compliance upon the recommendations of the AST and ensures the following:

3.3.1 Establish antimicrobial order tools for restricted antimicrobials by ASC for endorsement by the AST.

3.3.2 That the antimicrobial usage is conducted regularly and reports on antimicrobial utilization are provided to clinical departments and executive management committees.

3.4 The AST in each hospital provide specific guidance regarding antibiotic prescribing for surgical infections and surgical prophylaxis in accordance with existing relevant hospital policy and procedures. It is also the functional responsibility of the AST to:

3.4.1 Assist the prescriber or clinician for better utilization of the antimicrobial guidelines/ protocols and enhance de-escalation as well switching parenteral to oral when needed.

3.4.2 Conduct review on the restricted antimicrobials concurrently with the guidelines in a timely manner and provide feedback on improving utilization.

3.4.3 With the assistance of microbiology department, ensures that anti-biogram is prepared on annual basis to determine which antimicrobial is best against a strain of infection.

3.5 All clinicians and practitioners involved in antimicrobial ordering, dispensing, administration and monitoring antimicrobial resistance and antimicrobial stewardship practices must be properly educated and trained upon hiring to be granted initial privileges.

3.5.1 Continuous education and training is conducted regularly by AST members to improve antimicrobial prescribing of clinicians.

3.5.2 Physicians with prescribing privileges must conform with the provisions required in the hospital policies and procedures for prescribing antimicrobial agents.

3.5.3 Prescribing physician are provided with seminars and/or training conferences in order to be updated in the hospital therapeutic guidelines, policies and procedures.

3.5.4 The prescribing physician ensures that authorization is obtained from restricted drug physicians in accordance with the approved Antimicrobial Guidelines.

4. PROCEDURE:

4.1 The Director/Acting Director of Infection Prevention and Control will allocate adequate resources in terms of manpower and time for dedicated AST.

4.1.1 High-performing staff will be assigned/endorsed by Director/Acting Director, Infection Prevention and Control to the AST.

4.1.2 The Director/Acting Director of Infection Prevention and Control will endorse the annual AST activities, review the progress of the AST, identify barriers and provide advices on specific stewardship related cases and issues.

4.2 The AST consists of the following:

4.2.1 Consultant, Infectious Diseases will serve as Team Leader and perform the following:

4.2.1.1 Provide expert advice, educate prescribers, and play a major role in the development and implementation of antimicrobial policy and prescription guidelines.

4.2.1.2 On weekends, on-call Infectious Diseases Consultant will provide expert advice on Antimicrobial Stewardship activities.

4.2.1.3 Use antimicrobial stewardship as clinical outcome measures and quality improvement, wherein the outcome measurements include, but not limited to the following:

4.2.1.3.1 Antimicrobial Resistance Prevalence Rate

4.2.1.3.2 Antimicrobial Defined Daily Dose (DDD)

4.2.1.3.3 Duration of Therapy (DOT)

4.2.1.3.4 Antimicrobial Cost

4.2.1.3.5 Clostridium difficile Infection Rate.

4.2.2 Clinical Pharmacist/ Pharmacist will perform the following:

4.2.2.1 Review antimicrobial orders during unit-dose preparation process for inpatients daily in accordance with the Antimicrobial Guidelines and provide timely feedback (where applicable) to the prescriber. All pharmacists are included in antimicrobial order intervention.

4.2.2.2 Work with and educate pharmacists to identify potential patients for stewardship interventions (e.g. de-escalation, IV to oral switch etc.).

4.2.2.3 Ensure dose optimization is considered especially for complicated cases using multi antimicrobials. When in doubt about the treatment plan, the pharmacist discusses with the treating physician for clarification.

4.2.2.4 Arrange for reporting and auditing of antimicrobial prescribing and usage trends and adherence to antimicrobial stewardship guidelines within the hospital.

4.2.2.5 Assist with direct purchase of off licence agents when recommended by consultant medical microbiologists.

4.2.2.6 Leads and conducts appropriate antimicrobial audits.

4.2.2.7 Provide timely feedback for future improvement

4.2.2.8 Attends rounds with the AST two times a week depends on the agreement and internal work at pharmacy. The ground rounds initially conducted in Neonatal Intensive Care Unit (NICU) and Paediatric Intensive Care Unit (PICU).

4.2.2.9 Provide guidance on measure selection, data collection, analysis, validation of measurement data and the process measurement, which includes the following:

4.2.2.9.1 Percentage of compliance with the ASP recommendations; and

4.2.2.9.2 IV to Oral Switching Rate.

4.2.2.10 Approve the use of, and monitor the prescribing of antimicrobials, designated as 'restricted antimicrobials' within the hospital

4.2.2.11 Be a key member, in conjunction with the Infection Specialists and others, of a ward-focused antimicrobial team providing regular multidisciplinary antimicrobial stewardship input and reviewing prescriptions at a ward level.

4.2.2.12 Ensure timely communication to Infection Specialists when pharmaceutical supply issues are likely to have impact on availability of commonly used antibiotics

4.2.2.13 Check the patient's allergy status for antimicrobials.

4.2.2.14 Ensure antimicrobials are prescribed according to the best practice guidance provided within this policy. Highlight problems and challenge prescribers on cases that are not.

4.2.2.15 Refer to antimicrobial team if further advice or support is needed.

4.2.2.16 Regularly review prescriptions for patients on antibiotics that require therapeutic drug monitoring (TDM) such as gentamicin, amikacin and vancomycin.

4.2.2.17 If necessary, give advice to the prescriber on how to monitor these antimicrobials or in complex cases it may be necessary to refer the patient to the Antimicrobial Pharmacist, or Infection Specialists

4.2.3 Infection Control Preventionist/Coordinator will perform the following:

4.2.3.1 Prepares surveillance and audit reports

4.2.3.2 Obtain and timely provision of data as required by the Program

4.2.3.3 Ensures complete filling of the forms (whenever applicable)

4.2.3.4 Provide help in organizing the administrative and educational activities

4.2.4 Clinical Microbiologist will perform the following:

4.2.4.1 Provision of timely and accurate reporting of culture and antimicrobial susceptibility data

4.2.4.2 Prepare antibiogram on the annual basis (once a year)

4.2.4.3 Work closely with the attending clinician, infectious diseases specialist and antimicrobial pharmacist in the management of patients with infections.

4.2.4.4 Ensures to adopt new technology or advances in microbiological identification and susceptibility testing.

4.2.5 Prescriber will perform the following:

4.2.5.1 Prescribe antimicrobials according to the best practice guidance provided within this policy.

4.2.5.2 Initiating Antibiotics

4.2.5.2.1 The decision to start antibiotic therapy should be documented along with the indication or provisional diagnosis in medical records (this must include clear identification of prescriber and contact details). The indication must also be recorded on the drug chart.

4.2.5.2.2 Hospital antibiotic guidelines should be followed unless there is a clear clinical reason. Any deviation should be recorded in the medical notes. Consult with a medical microbiologist if guideline choice is contraindicated or patient does not respond to therapy.

4.2.5.2.3 All allergies must be recorded on the front of the drug chart and anaesthetic record. The nature of the allergy/reaction should also be stated. Patients with a history of allergies should be assessed and the allergy label removed where it is not correct.

4.2.5.2.4 In severe sepsis or life-threatening infections treatment should be started urgently and within one hour of diagnosis.

4.2.5.2.5 For patients with less severe infection, it is only necessary to cover the expected pathogens. Broad spectrum agents are sometimes not as potent as narrow-spectrum agents against certain pathogens

4.2.5.2.6 Appropriate specimens should be obtained for culture.

4.2.5.2.7 IV therapy should only be used in patients who are severely unwell, unable to tolerate oral therapy or when oral antibiotics would not provide adequate coverage or tissue penetration.

4.2.5.2.8 • Prescribers should consider the risks of infection with multidrug resistant pathogens. Risks are increased by previous healthcare exposure, previous antibiotic therapy, prolonged hospital stay, previous infection/colonisation with an MDR pathogen, travel to some countries outside the UK.

4.2.5.2.9 • A range of multi resistant bacteria will be encountered clinically, i.e. MRSA, VRE, ESBL producing Enterobacteriaceae, carbapenem resistant Gram negative rods and others. Treatment should be discussed with a Medical Microbiologist.

4.2.5.2.10 • Restricted antibiotics should only be prescribed after discussion with a medical microbiologist, or if recommended by these guidelines. A list of antibiotics used at MCH can be found on the policy.

4.2.5.2.11 A stop or review date must be documented on the prescription and in the medical notes when antibiotics are prescribed.

4.2.5.3 Continuing Antibiotics:

4.2.5.3.1 **START SMART, THEN FOCUS**. Review therapy after 48-72 hours when culture results are available and document the decision in the medical notes. There are 5 options for review:

4.2.5.3.1.1 **Stop** antibiotic therapy if no clinical evidence of infection

4.2.5.3.1.2 **Switch** therapy from intravenous to oral (following IV to oral switch guidelines)

4.2.5.3.1.3 **Change** antibiotics to a narrower spectrum depending on cultures and sensitivities

4.2.5.3.1.4 **Continue**

4.2.5.3.1.5 **Discharge** patient with IV antibiotics (after discussion with microbiology

4.2.5.3.2 Microbiology results should be reviewed daily and therapy de-escalated as needed.

4.2.5.3.3 Treatment with IV antibiotics should be switched to oral therapy within 24 hours of meeting the switch criteria. The rationale for continuing with IV antibiotics should be recorded in the notes.

4.2.5.3.4 Treatment beyond 5 days is not normally necessary. Rationale for continuing beyond 7 days should be clearly documented.

4.2.6 Nurses and midwives will perform the following:

4.2.6.1 Urgently clarify unclear prescriptions with the prescriber including those which they consider or potentially erroneous or dangerous

4.2.6.2 Start all antimicrobial courses promptly. For some life-threatening indications, such as sepsis, ensure that the first dose of antibiotic is administered within one hour of the diagnosis.

4.2.6.3 Prevent missed doses. If an antimicrobial is not available on the ward make it an urgent priority to get a supply from pharmacy so that the dose is not missed. 'Drug Unavailable' is not a valid reason for an antimicrobial dose to be missed.

4.2.6.4 Be aware of contact details to access on call pharmacist when a prescribed drug is not available in ward stock out of hours .

4.2.6.5 Do not give antimicrobials beyond their stop date.

4.3 Pre-authorization System for Restricted Antimicrobials

4.3.1 MCH has restricted antimicrobial policy where specific antimicrobials would be restricted by specific physicians in each hospital.

4.3.2 If a physician is not privilege to prescribe an antibiotic, s/he has to go over required steps to obtain authorization.

4.3.3 At initiation of treatment, the prescribing physician will provide a clinical rationale for antimicrobial initiation.

4.3.4 The prescribing physician will send the appropriate specimens to diagnostic microbiology before the administration of antimicrobials.

4.3.5 The prescribing physician will select the antimicrobial according to the hospital Antimicrobial Guidelines.

4.3.6 When prescribing restricted antimicrobial, the prescribing physician has to communicate with the AST in a timely manner to obtain the authorization.

4.3.7 Upon contacting AST, the prescribing physician will be able to provide detailed clinical status of the patient, indication for antimicrobial therapy, drug allergies and microbiology

4.3.8 The AST member will respond to the prescribing physician in a timely manner, discuss the case with the prescribing physician and on the basis of the information provided, may recommend the use of the restricted agent or recommend an alternative therapeutic option or recommend further investigations or clinical follow- up.

4.3.1.1 Targeted restricted antimicrobials require approval within 24 hours for non-ICU orders and within 72 hours for ICU orders.

4.3.1.2 The AST service is active on weekdays from 08:00 to 15:00 hours.

4.3.9 Approvals during the weekends will require authorization from the on-call Infectious Disease Consultant or their designee.

4.3.10 Clinical pharmacist will identify patients in need for ASP intervention and help in making appropriate clinical decisions with the AST.

4.3.11 Compliance with the pre-authorization or pre-approval process will be audited on a regular basis by the AST.

4.4 Antimicrobial Review and Prescriber Feedback The AST will review and provide feedback at the unit level in wards with high antimicrobial usage (e.g. intensive care)

4.5 Prescribing Physicians During continuation of treatment, the prescribing physician will monitor antimicrobial drug levels as required by the hospital policy and ensure daily consideration of de- escalation, intravenous-oral switch or stopping antimicrobials (based on clinical picture and laboratory results).

4.6 ASP Point-of-care (POC) interventions

4.6.1 AST will provide direct feedback to the prescriber and an opportunity to educate clinicians on appropriate prescribing.

4.6.2 ASP Point-of-care interventions will be determined by the Executive Management and experts, which includes but is not limited to the following:

4.6.2.1 Reviewing appropriateness of choice of antimicrobial and eliminating dual therapy.
4.6.2.2 Directed therapy based on microbiological studies.
4.6.2.3 Dose optimization d. Parenteral-to-oral conversion
4.6.2.4 Therapeutic drug monitoring
4.6.2.5 Automatic stop orders
4.6.2.6 Appropriateness of time of initiation of antibiotic therapy with respect to time of surgery for prophylactic use and with respect to time of cultures for therapeutic use.

4.7 Information Services and Informatics Division (ISID)

4.7.1 As required by the AST, ISID will provide access to the Hospital Information System (HIS) electronic medical record (EMR), software and hardware support, as well as, support in maintaining electronic files, records, etc.

4.7.2 AST's access to the patient's EMR will be initiated by completing the HIS-EMR form.

5. MATERIAL AND EQUIPMENT:

5.1 Hospital antibiogram
5.2 List of approved Restricted Antimicrobial Medications
5.3 Restricted Antimicrobial Order

6. RESPONSIBILITIES:

6.1 Infectious diseases consultant
6.2 Pharmacists
6.3 Physicians
6.4 IPC Staff
6.5 Microbiologist
6.6 Nurses and midwives

7. APPENDICES:

7.1 Hospital antibiogram (Appendix A)
7.2 List of approved Restricted Antimicrobial Medications (Appendix B)
7.3 Restricted Antimicrobial Order (Appendix C)

8. REFERENCES:

8.1 The GCC Infection Prevention and Control Manual,3rd Edition

9. APPROVALS:

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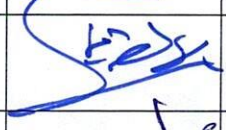
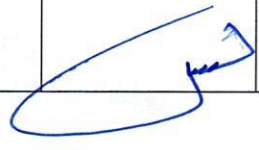
Reviewed by:	Mr. Abdulellah Ayed Al Mutairi	QM&PS Director		January 24, 2024
Reviewed by:	Dr. Tamer Naguib	Medical Director		January 28, 2024
Approved by:	Ph. Fahad Hezam Al Shameri	Hospital Director		January 30, 2024

Kingdom of Saudi Arabia
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المملكة العربية السعودية
التجمع الصحي بحفر الباطن
مستشفى الولادة والأطفال

List of Restricted Antimicrobial Medications *

G+ve Bacteria		G-ve Bacteria		Fungi
Specialists' List**	**Consultants' List****	**Specialists' List****	**Consultants' List****	**Consultants' and Specialists' List****
• **Penicillin:**	• **Macrolides:**	• **Penicillin:**	• **Penicillin:**	Andilufungin
Ampicillin	**Azithromycin**	Amoxicillin-Clavulanic acid	Imepenem	Amphotericin B
Imipenem	Levofloxacin	Ampicillin	Meropenem	Caspofungin
• **Cephalosporin:**	• **Sulfonamide:**	Pipracillin- Tazobactam	• **Cephalosporin:**	Fluconazole
Cefazolin	Trimethoprim-sulfamethoxazol	• **Cephalosporin**	Ceftriaxone (except in PER prescribed by specialists)	
Ceftriaxone	• **Miscellaneous:**	Cefazolin	Ceftazidime	
Cefotaxime	Linezolide	Cefotaxime	Cefepime	
Miscellaneous:	Tobramycin	Cefoxitin	• **Macrolides:**	
Rifampin	Tigecyclin	Cefuroxime	Levofloxacin	
Clindamycin	Vancomycin	• **Aminoglycosides:**	• **Sulfonamide:**	
Ciprofloxacin		Gentamycin	Trimethoprim–sulfamethoxazol	
		Amikacin	**Miscellaneous:**	
			Ciprofloxacin	
			Colistin	
			Tigecyclin	
			Tobramycin	

*Medications list was selected based on: hospital Antibiogram, medications cost, treatment guidelines and serious side effects related to some antibiotic.

**Or whoever acts on his/her behalf on some hospital departments as MICU.

Note: Caution in selecting these antibiotics is advised, discussion with Microbiologist or ID specialist is recommended.

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