Infectious Diseases

Description of Rotation:
The Infectious Disease rotation is a learning experience directed at managing pharmacotherapy related to common infectious diseases while practicing antimicrobial stewardship. In this setting there is a critical role for pharmacists to contribute medication-related information to the healthcare team with the goal of optimizing health outcomes for patients. Students will participate in interdisciplinary rounds and work closely the team, consisting of pharmacists, physicians, nurses, residents, and/or other students, on medication related infectious disease issues. Identification of potential drug therapy problems, design and modification of antimicrobial therapy regimens, therapeutic drug monitoring, provision of drug information, and patient counseling are core components of the rotation.

Goals of Rotation:
Facilitate student learning and critical thinking skills in Infectious Diseases in order to prepare the student to understand and apply comprehensive medication management skills in collaboration with the health care team.

1. Understand patient healthcare needs.
2. Apply evidence-based medicine.
3. Enhance and reinforce didactic coursework.
4. Develop interpersonal communication skills.
5. Describe the pathophysiology of common illness.
6. Explain monitoring parameters given the particular disease state and the treatment regimen (including efficacy, toxicity, side effects, and potential drug interactions).
7. Demonstrate leadership skills for successful self-development in the provision of care for patients.

Learning Objectives:
Upon completion of this rotation the student should be able to:

1. Develop a foundational clinical approach to patient care that can be applied in all practice settings.
2. Understand the role of a pharmacist on the infectious diseases team.
3. Actively participate in rounds for patients on the Infectious Disease service.
4. Review and improve understanding of pathophysiology and pharmacotherapeutics in the area of infectious diseases.
5. Identify infectious disease-related problems with competency and confidence.
6. Utilize patient data to identify potential and present medication related problems.
7. Collect data (consult reason/diagnosis, labs and cultures, medications, vital signs) and analyze findings to assist in making therapeutic recommendations.
8. Utilize patient-specific factors and evidence-based medicine to design a therapeutic regimen.
9. Review and assess each patient’s pharmacologic regimen for appropriate indication, dose, route/method of administration, and duration of therapy.
10. Identify and resolve any therapeutic duplications, unintended drug interactions, or adverse events.
11. Design and implement evidence-based medication and disease-related monitoring that effectively measures the achievement of patient-specific pharmacotherapeutic goals.
13. Concisely present patient cases with clarity and accuracy.
15. Demonstrate confidence in providing therapeutic recommendations to physicians, nurses and other health-care professionals.

Activities:

1. Rounding with Physician teams
   a. Interpretation of susceptibility testing results
   b. Empiric and targeted antimicrobial therapy recommendation
   c. Monitoring patient outcomes
2. Patient assessment
   a. Age
   b. Renal and hepatic function
c. Pregnancy/lactation
d. History of allergy or intolerance
e. History of recent antimicrobial use

3. Antimicrobial stewardship
4. Drug information
5. Educational programs
   a. Patients
   b. Medical Staff
   c. Students
6. Presentations
   a. Pharmacists
   b. Residents
   c. Technicians
   d. IPPE/APPE students
   e. Nursing
7. Journal clubs
8. Discussions on ID topics
9. Data collection
10. Formulary Management
11. Required Readings

Common topics and disease states encountered in the Infectious Diseases setting (list not inclusive):

1. Pathogens: Bacterial (Gram positive, Gram negative, etc.), viral, fungal
2. Antibiotic/Antiviral/Antifungal classes and spectrums of activity
3. Infectious disease states:
   - Pneumonia (CAP, HAP, VAP)
   - UTIs
   - STIs
   - Skin and soft tissue infections
   - Osteomyelitis/Prosthetic joint infections
   - Intra-abdominal infections
   - C. Difficult
   - Febrile neutropenia
   - Bacteremia/Sepsis
   - Endocarditis
   - Meningitis
   - Hepatitis
   - HIV/AIDS

4. Pharmacokinetics/Pharmacodynamics
5. Mechanisms of bacterial resistance
6. Antibiotic allergy and desensitization
7. Antibiotic Stewardship

Potential longitudinal activities to accomplish at site:

1. Patient Care Activity {Patient Care Provider/Practice Manager Domain}
   a. Identify and collect appropriate drug-related monitoring parameters for each assigned patients using EBM.
   b. Maintain an adequate patient database for each assigned patient.
   c. Participate in intradispisplanary rounds
   d. Identify and prioritize drug-related problems for each assigned patient
   e. Assess the appropriateness of each assigned patient's drug therapy
   f. Construct a detailed pharmacotherapeutic plan for each assigned patient
   g. Present all patient data in a concise and meaningful fashion
   h. Provide evidence-based regimens and monitoring plans for each patient
   i. Provide a verbal therapeutic plan recommendation to another health-care professional.
   j. Verify Patient's Allergies and intolerances
   k. Identify and manage drug interaction for a specific patient
   l. Observe a Code in Health-Care Setting
   m. Observe a Health Care professional perform a full physical examination and assess results
   n. Enter patient-specific information into an electronic health or pharmacy record system
   o. Prepare commonly prescribed medications that require basic sterile compounding prior to patient use or basic non-sterile compounding prior to patient use

2. Physical Assessment Activity {Population Health Promoter Domain}
a. Interpret diagnostic tests results for patient/caregiver/or preceptor
b. Take a patient’s blood pressure
c. Take a patient’s pulse
d. Take a patient’s respiratory rate
e. Assess a patient’s temperature
f. Assess an ECG (EKG)
g. Foot Exam (diabetes) (Observe)

3. Assessment Activities {Population Health Promoter Domain}
a. Assess a creatinine clearance for an adult/ renally insufficient patient
b. Assess a creatinine clearance for a child/infant
c. Assess a body surface area (BSA) for an adult
d. Assess an ideal body weight (IBW) for an adult

4. Intervention Activities {Population Health Promoter Domain}
a. Recommend empiric antibiotic therapy
b. Recommend antibiotic therapy based upon a culture and sensitivity
c. Determine monitoring parameters for a patient being treated for an infectious disease
d. Adjust a drug dose in a patient with renal insufficiency
e. Assess the significance of a drug-drug interaction

5. Education / Research activities
a. {Interprofessional/ Team Member Domain}
   i. Explain to a patient, caregiver, or colleague each team member’s role and responsibilities
   ii. Contribute medication-related information to the team’s work
b. {Informational Master Domain}
   i. Prepare a written pharmacokinetic consultation
   ii. Prepare a handout for case presentation
   iii. Prepare an article for a newsletter or publication
   iv. Prepare a patient education sheet
   v. Prepare a written drug information response in a practice setting
   vi. Provide options for medication shortage
   vii. Provide a formal case presentation
   viii. Provide an educational presentation to pharmacists
   ix. Provide an educational presentation to other health care professionals
   x. Lead a Journal Club discussion
   xi. Participate in a Drug Utilization Project
   xii. Participate in a Patient/Medication Safety Review or error reduction program
   xiii. Attend and or develop a monograph for the P+T Committee
   xiv. Discuss the role of a pharmacists as a manager and supervisor
   xv. Assist or discuss the preparation for regulatory visits and inspections
   xvi. Participate in a discussion of a pharmacist’s role in ethical issues related to any of the following topics: end of life care, professional behavior, clinical research, and pharmacy current event/hot button issue
   xvii. Discuss the process of formulary drugs and how to authorize the use of non-formulary medication when clinically appropriate
c. Continued Professional Development {Self-Developer Domain}
   i. Continue Professional Development: Provide or Attend a Continuing Education Program