Welcome to Temple University Hospital. This clinical clerkship is developed to provide training in the area of infectious diseases through participation on an infectious diseases consult team. This clerkship offers an opportunity for you to provide a service for the medical staff and patients under the direction of a clinical pharmacist in infectious diseases.

This manual contains a description of the rotation’s requirements and your responsibilities during the 5-week clinical rotation. Please read this manual over carefully and your preceptor will be available to answer any of the questions that you might have.

This clinical rotation should be an enjoyable learning experience for you.
General Information

A. **Times:** Starting time is variable, but you will meet with your preceptor at 10am most days. Rounds occasionally continue into the evening, but you are not obligated to stay past 5pm. Leaving your rotation early to go to work is not acceptable. Most pharmacy jobs are very understanding about this.

B. **Dress:** Short white lab coat, nametag, and appropriate attire for patient care areas. Jeans, sneakers, miniskirts, and jogging outfits are NOT appropriate attire for a healthcare professional.

C. **Absenteeism:** Allowed only under extenuating circumstances. All missed days must be made up on date/time prearranged by the preceptor. If you are ill or will be absent for any reason, you are **REQUIRED** to leave a message for your preceptor on voice mail.

D. **Communications:**
   - Department of Pharmacy Practice: 707-4934
   - In-house page: dial 66 and follow directions
   - Out of house page: 707-2089

**Temple University Hospital Clinical Preceptors:**

- Christina Rose, Pharm.D. SICU pager 363-1831
- Courtney Vincent, Pharm.D. MRICU pager 1260
- Carol Morreale, Pharm.D., BCPS MRICU pager 1140
- Christina Ruggia-Check, Pharm.D., BCPS Heart Failure pager 2920
- Christine Fitzgerald, Pharm.D. Investigational Drugs
- Tammy Babinchak, Pharm.D. Antibiotic Management pager 2235

**Temple University Faculty Preceptors at TUH**

- Anna Wodlinger, Pharm.D., BCPS CICU pager 363-4207
- Charles Ruchalski, Pharm.D. Internal Medicine pager 363-2138
- Jason Gallagher, Pharm.D., BCPS Infectious Diseases pager 2995
- Joel Shuster, Pharm.D., BCPP IM, Psychiatry pager 1187
- Joseph Boullata, Pharm.D., BCNSP Nutrition Support pager 1584
- Michael Jacobs, Pharm.D. Internal Medicine phone 707-4934

E. **Evaluations:** Evaluations will be completed weekly.
Temple University Hospital

This clinical clerkship is designed to provide the student with basic exposure to the practice of clinical pharmacy by spending five weeks with the Infectious Diseases Consult Service.

Hospital Facility Layout
Temple University Hospital serves as both a tertiary referral center and a primary health provider, treating more than 250,000 outpatients and admitting over 20,000 patients each year. It is the nexus of a larger health system and receives many complex patients with multiple medical problems.

Infectious Diseases Consult Team
You will participate as a member of the ID consult team. This team is a group of clinicians that sees patients with infectious diseases at the request of a primary service. It serves as an advisor on ID-related issues, but the primary team is not obligated to follow the recommendations. The team consists of an attending physician, one or two fellows, one or more medical and/or pharmacy residents, a clinical pharmacist, and various amounts of medical and pharmacy students.

Medical Grand Rounds – Weekly, Wednesdays at 11:30-12:30. This conference of the Temple University Department of Medicine features invited speakers to discuss new and interesting developments in medicine. Attendance may be required, depending on the topics discussed.

Rotation Objectives

1. Develop a strong clinical approach to patient care that can be logically applied in any healthcare setting.
2. Become proficient in identifying infectious disease-related problems.
3. Review and improve your database in pathophysiology and pharmacotherapeutics in the area of infectious diseases.
4. Develop communication skills with other health care providers and classmates.
5. Become proficient at concisely summarizing patient problems in relevant terms.
6. Obtain and present drug information to the medical team, your classmates, and your preceptors as required.
7. Establish monitoring parameters for the drugs prescribed and the infectious diseases of your patients.
8. Familiarize yourself with drug information resources and become adept at searching the literature.

Patient Care Activities

A. Day to Day Responsibilities
   1. Acquire new patients and follow current patients daily, following lab values, medication changes, and cultures.
   2. Print up patient profiles on ALL patients on your service DAILY. Review profiles for drug interactions, appropriate dosing, ADRs, etc. If you identify a drug-related problem, discuss with your preceptor before making any recommendations to the medical team.
   3. Determine the indication of and need for each drug that your patients are taking.
4. Formulate a plan for each infectious disease-related problem that your patients have, including need for intervention.
5. Check the med administration record to see if the drug was correctly administered for the following situations:
   - Drug levels are ordered
   - Patient appears to have a toxic reaction to a medication
   - Patient is not responding to appropriate doses
6. Identify and report any ADRs if they occur in any of your patients. Significant ADRs will be reported to the hospital and FDA through the MedWatch system.
7. Follow patients to determine if recommendations are needed.
8. Answer drug-related questions that arise from medical team or preceptor.

B. Recognize and Identify Drug-related problems
1. Utilize information in patient case to construct a list of medical problems, focusing on those which:
   - Require antimicrobial therapy
   - Are caused by antimicrobial therapy
   - Alter the selection of drugs and/or dosing regimens (renal dosing, allergies, etc.)
2. Review the patient’s profile daily and for each drug (with an emphasis on antimicrobials), ask yourself the following questions:
   - What is the indication?
   - Is the dosage correct for this patient? (review dosing in renal and/or hepatic dysfunction)
   - Is the route of administration appropriate? Can the patient take oral meds?
   - Is the patient experiencing an adverse effect from one of the medications?
   - What subjective and objective parameters should be monitored to assess therapeutic response? What are the therapeutic endpoints?
   - What subjective and objective parameters should be monitored to identify adverse effects from a medication?
   - Is this the best medication for this patient? Consider efficacy, side effects, drug interactions, convenience, and cost.

C. Solving Drug-Related Problems
   - Prioritize the patient’s problem list as it relates to his/her infectious process.
   - Develop a therapeutic plan that consists of your recommendations regarding drug appropriateness, length of therapy, dosage adjustments, etc. to the patient’s current antibiotic regimen.
   - Develop a monitoring plan to determine if the changes you’ve recommended are resulting in the desired therapeutic outcome without causing other drug-related problems.

Workflow on the Infectious Diseases Team

Following Patients – Each student is expected to follow every assigned patient daily. Record labs, medications, etc on a monitoring sheet of your choosing. Formal SOAP notes will be evaluated weekly, but not daily.

Daily Routine – ID Team
   Every day, the ID team accrues new patients and visits patients currently being followed. New patients are seen by the entire team in the afternoons, generally
beginning at 2pm in radiology. In the AM, the ID fellows/medicine residents/medical students are evaluating new and old patients, and in the afternoon the entire team (with the attending physician and pharmacists) evaluate the patient together to render a decision about the recommendation.

**Daily Routine – Pharmacy Students**
Every day, you should come in at a time that is sufficient to evaluate the progress of each of your assigned patients. We will meet in the morning around 10am most days to discuss your patients and any discussion topics for the day. We’ll conclude our meeting before lunch and meet again in the afternoon for rounds. Rounds may continue until past 5pm, but you are not obligated to stay past that time.

**Tips and Additional Points**
- Don’t fake it! If you are not sure about a situation, tell the preceptor
- Plan your day to allow time to revisit patients whose charts were missing the first time you checked
- Learn your antibiotics and their spectrum of activity – this will come up again and again and again, and then again
- Know your background disease states – discussion may turn towards them as well
- Check the timing of your vancomycin and aminoglycoside levels
- Find surrogate markers of oral absorption (BP control, therapeutic INR with warfarin, etc)
- Closely follow WBC, SCr, Tmax and LFTs

**Topic Discussions**
During the course of the rotation, students will present topic discussions pertinent to infectious diseases. These will be scheduled at the beginning of the rotation, will be student-led, and will occur several times per week. Topics covered will include disease states encountered while participating on ID rounds. Discussions should be 15-25 minutes in length, be guideline-based, and **should focus on pharmacotherapy** (not diagnosis). Incorporation of recent literature is required – one journal article per discussion. Do not reference any of your professors’ material – look to the sources they used to develop those lectures. Textbooks are discouraged as primary references for topic discussions.

**Inservice/Case Presentation**
All students completing clinical rotations at Temple University Hospital take place in a series of journal clubs and inservices/case presentations at the School of Pharmacy. During these, a case encountered on rotation is presented to faculty and students along with a relevant discussion on the disease state encountered. A focus on recent literature is encouraged.

**Journal Club**
All students completing clinical rotations at Temple University Hospital take place in a series of journal clubs and inservices/case presentations at the School of Pharmacy. Students are expected to select a current journal article from a reputable journal (eg – **Clinical Infectious Diseases, JAMA, NEJM, Annals, Pharmacotherapy,** etc). Journal articles must be approved by your preceptor no later than one week before your presentation. Make copies of the journal
article for participants to read prior to the scheduled presentation. A typed handout must be prepared and provided to all journal club participants.

During the course of the rotation, other journal articles and guidelines will be provided for students to read to enhance understanding of infectious diseases. Though no formal journal club will be performed on these articles, it is expected that students will know their content.

**Tips and Additional Points**

- Students are **responsible to know background information that is relative to the treatment/intervention studied** (including drug information). A good critique of the article does not equal a good grade if it is not discussed in the context of background information.
- The article must be approved by the preceptor.
- Students should provide intended audience with copies of articles several days prior to the presentation.
- A handout, following the above format, should accompany the presentation.
- Presentations should be ~ 20 minutes in length with 10 minutes left for discussion and questions.
- If you have a difficult time finding a pertinent article, ask for assistance.

**Other Activities**

Students may be required to participate in other clinical projects as determined by the preceptor. These may include but are not limited to drug utilization evaluations, drug information presentations, additional journal club presentations, new drug evaluations, and pharmacy in-services.

Students who miss significant amounts of rotation time will be assigned make-up projects. If the amount of time missed is unreasonable, the rotation may need to be repeated.

**Grading**

The TUSP Clinical Clerkship grading form will be used for grading. It is located in the Clerkship Manual for your reference.
Suggested References

www.idsociety.org

www.doctorfungus.com


Update of Practice Guidelines for the Management of Community-Acquired Pneumonia in Immunocompetent Adults
Lionel A. Mandell, John G. Bartlett, Scott F. Dowell, Thomas M. File, Jr., Daniel M. Musher, and Cynthia Whitney
Clinical Infectious Diseases 2003;37:1405-33

Guidelines for the Selection of Anti-infective Agents for Complicated Intra-abdominal Infections
Clinical Infectious Diseases 2003;37:997-1005

2002 Guidelines for the Use of Antimicrobial Agents in Neutropenic Patients with Cancer
Walter T. Hughes, Donald Armstrong, Gerald P. Bodey, Eric J. Bow, Arthur E. Brown, Thierry Calandra, Ronald Feld, Philip A. Pizzo, Kenneth V. I. Rolston, Jerry L. Shenep, and Lowell S. Young
Clinical Infectious Diseases 2002;34:730-51

Practice Guidelines for Evaluating New Fever in Critically Ill Adult Patients
Naomi P. O'Grady, Philip S. Barie, John Bartlett, Thomas Bleck, Glenda Garvey, Judith Jacobi, Peter Linden, Dennis G. Maki, Myung Nam, William Pasculle, Michael D. Pasquale, Debra L. Tribett, and Henry Masur
Clinical Infectious Diseases 1998;26:1042-59

Guidelines for Treatment of Candidiasis
Peter G. Pappas, John H. Rex, Jack D. Sobel, Scott G. Filler, William E. Dismukes, Thomas J. Walsh, and John E. Edwards
Clinical Infectious Diseases 2004;38:161-89

Guidelines for the Management of Adults with Hospital-acquired, Ventilator-associated, and Healthcare-associated Pneumonia
Developed by the American Thoracic Society and the Infectious Diseases Society of America