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**College of Pharmacy, Qassim
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**Pharmacy College APPE
Committee**



Experiential Program Manual

Advanced Pharmacy Practice Experiences (APPE) The Internship Year



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Disclaimer:

The information in this Manual is intended for informational purposes only and does not constitute a legal contract between College of Pharmacy, Qassim University and any person or entity.

Acknowledgment

This Advance Pharmacy Practice Experience (APPE) manual has been developed and written with the goal of providing internship students with the guidance needed to function with required skill and confidence during one year of APPE. The College of Pharmacy, Qassim University wishes to acknowledge and thank all the contributors of this manual.

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I. Introduction

The APPE Program of the College of Pharmacy, Qassim University has been designed to integrate practical skills and experience with knowledge gained during the undergraduate degree. Drawing upon lifelong learning skills, interns will continually build upon this base throughout their professional career as a professional and competent pharmacist. This APPE manual assist the interns in detection and management of drug-related problems and for promoting safe and effective rational drug therapy.

The APPE Program is prepared to provide academically supervised clinical experiences which will impart students to scientifically updated and appropriate methods of collecting and applying clinical information concerning the therapeutic and toxic effects of drugs...

The APPE manual is designed to prepare interns for a successful career as a professional and ethical pharmacist with the ability to think critically and apply knowledge and skills in the best interest of patients regarding individualized pharmacotherapy planning, intervention and outcome evaluation. The clinical experiences imparted on interns by well qualified and experienced preceptors will help the interns to choose their clinical specialty, to continue successfully in their life-long learning and practice and to meet their responsibilities as a health care practitioner for the overall benefit of patients and other health care professionals.

II. The Program Objectives

The APPE of College of Pharmacy has been developed in such a manner that assures its interns use the updated knowledge and skills learned in the Pharm. D. program of the Qassim university- College of Pharmacy to develop skills to provide pharmaceutical care in the real world setting.

More specifically, the College of Pharmacy strongly strives for competency based APPE program and focuses on the achievement of following set of outcomes of learning.

1. Learn to work professionally and ethically in a variety of pharmacy practice settings
2. Able to evaluate, review or develop, implement and monitor therapeutic outcomes associated with a pharmaceutical care plan for a patient.
3. Learn to identify and utilize drug information services in order to become drug information specialist for other health care professionals and patients to achieve positive therapeutic outcomes
4. Develop oral and written communication and presentation skills on drug-related topics and education to health care professionals and patients.
5. Develop latest and scientifically relevant therapeutic knowledge to evaluate and review medical information to be able to solve drug related problems via evidence based decisions.
6. Able to provide accurate drug related counseling to patients
7. Develop therapeutic parameters and become competent in monitoring the patients for therapeutic endpoints on an ongoing basis
8. Understand the responsibility and reporting mechanism for adverse drug reactions
9. Competently use pharmacokinetics in developing and monitoring the patient's drug therapy
10. Develop ability to independently retrieve and analyze professional and scientific literature and use the findings to improve patient care and to become lifelong learners.

III. Experiential Program Manual

Functions of APPE Committee

The APPE Committee is set up under the Pharmacy Practice Department Council and set to perform following functions.

Responsible for assigning, planning, implementing, monitoring, scheduling and placement of Advance Pharmacy Practice Experience (APPE) rotations for interns.
Registering new interns and conducting orientation workshop
Developing and updating standards, code and conduct, goals and objectives, competencies, learning outcomes and guidelines for APPE program
Handling notifications, complaints, investigations and disciplinary hearings regarding interns
Assisting and communicating with preceptors regarding the overall successful conduction of APPE Program
Periodic evaluation, monitoring and assessment of intern's performance based on APPE learning objectives and outcomes.

IV. Rotation Policies and Procedures

A. Preceptor Responsibilities

- Preceptor should be knowledgeable of and compliant with the material contained in this Manual.
- Preceptors are responsible for clearly communicating student expectations regarding performance, appearance, attitude and method of practice
- Preceptors should be responsible to provide orientation to the students about the laws and regulations of the training site, discipline and ethics of the professional practice.
- Preceptors are responsible to delegate defined duties and assignment to students with appropriate supervision and direction, but never use students as substitution for regular staff.
- Preceptors should not assume intern's competency but determine it by reviewing the intern's performance through discussion and observation
- Preceptors should encourage student to communicates with health care professionals

regarding all aspects of rotation

- Preceptors should maintain proper attendance of students to make it sure that they observe punctuality of time (daily attendance, medical team rounds, and any other clinical activities).
- Preceptors are expected to provide constructive criticism , conveyed in private and appropriate manner
- Preceptors are responsible for reviewing student’s progress at regular intervals and submit the assessment reports to the APPE Committee.
- Preceptors should respect confidentiality of interns
- Preceptors are responsible for verifying intern attainment of required rotation outcomes.
- Preceptors should inform the interns of any areas requiring improvement
- Preceptor needs to hold the students accountable for their responsibilities to the rotation site and their own leaning. Should a student not be meeting these expectations, the preceptor need to contact the APPE committee for further guidance and support in addressing these situations.

B. Student Responsibilities

- Student must follow the instructions written in this manual precisely and carefully.
- Students are responsible for contacting the APPE committee secretary one week prior to the start of rotation to confirm arrangements and registration for the rotation.
-
- Students should not copy or remove confidential information from rotation sites Identify yourself as a graduate student pharmacist in interactions with patients and other healthcare professionals within the training site.
- Students are expected to be present at the rotation site at least 40 hours per week during each rotation Students are responsible for adhering to the rotation schedule, assignments and timings and reporting all of their daily activities to the preceptor
- Students should complete the assigned duties given by the preceptor
- Students should demonstrate professionally and ethically at all times when in rotation.
- .
- Students should take the initiative in communicating with physicians, patients and other healthcare professionals but only under the supervision of their Preceptors.
- .
- Student should abide by the laws and regulations that govern pharmacy practice and seek clarification from the preceptor when necessary.

C. Professionalism

Through the APPE Program, the College of Pharmacy provides an experiential learning environment for the students to develop sufficient, relevant and experiential knowledge base to utilize appropriate resources necessary to provide patient centered care, individualized therapeutic planning and accountability for therapeutic outcomes in the process of providing pharmaceutical care. The APPE program develops professionalism and interpersonal skills in students to work as the member of healthcare team, which is necessary for the provision of optimal patient care and pharmaceutical services.

Professional behavior expected from all interns (trainee) at all times includes but not limited to: -

- The student's appearance should be abided with the dress code (clean ironed white lab coat should be worn at all times and must wear the college identification badge and/or rotation identification at all time as instructed by the Preceptor..
- The student should interact with their rotation specific Preceptor and other health care professionals in a respectful professional manner.
- Behavior of a student reflects on a student's qualification and potential to become a competent pharmacist.
- Attitudes and behaviors inconsistent with compassionate care, refusal by or inability of the student to participate constructively in learning or patient care, derogatory attitudes or inappropriate behavior directed at patient groups, peers, faculty or staff, or other unprofessional conduct, can be grounds for dismissal from rotation, program or other disciplinary actions.
- Students are responsible for self-learning as requested

D. Student Assessment and Evaluation

1. Assessment Terminology

The following definitions should be used when assessing students:

Excellent	Very good	Satisfactory	Poor	Deficient
Consistently performs above expected pharmacist level and displays attributes consistent with an advance practitioner	Often performs at a level above expected pharmacist competency	Performs at a pharmacist level. Display attributes consistent with readiness to enter general practice	Rarely performs at the level expected for a pharmacist. Needs improvement to be ready to enter general practice	Not applicable or no opportunity to evaluate during the rotation

A copy of the assessment form to be used by Preceptors is available in Appendix.

2. Advance Pharmacy Practice Experiences (APPE) Assessment Process

- Students will be assessed by their respective Preceptors by using the Rotation Assessment Form (attached in the Appendix)
- Preceptors assess students based on the general program objectives of APPE and rotation specific learning outcomes
- The assessment criteria is based on four general outcomes of general skills and abilities, clinical management/judgment/knowledge, drug information/oral-written communication skills and presentation skills divided into 40 sub-categories of 16,14, 10 and 1 points respectively.
- There are five checked boxes from 1 to 5 against each sub-category of assessment outcome and Preceptor should tick each box according to the student's performance based on the assessment terminology mentioned above
- In addition to the five boxes, some outcomes may be "Non-Applicable", as some practice sites may be unable to provide an opportunity for students to complete the assigned outcome and hence these points should not be included in the calculation.
- Students will be marked against following assessment terminology

Excellent: 5 marks
Very good: 4 marks
Satisfactory: 3 marks
Poor: 2 marks
Deficient: 1 mark

- After evaluating the relevant assessment outcome, total score of student is then divided by number of evaluated points then multiplied by 20 to get the final percentage of achievement in the specific rotation.
- A minimum of 70% should be achieved by student to pass any rotation
- Based on the total score, the preceptor should also highlight specific strength of student noted during the rotation and areas needing improvement on which future preceptors should focus during subsequent rotations.
- Students are also evaluated and marked based on their punctuality and attendance. To evaluate this criterion Preceptors should tick the boxes provided in the rotation assessment form against five criteria of excellent, good, average, below average and poor.
- Successful completion of the APPE program shall be based on a recommendation by the Preceptor through the assessment of the student's performance throughout the APPE Program.

- Preceptor and the student should sign and date the rotation assessment form and the completed assessment form should be returned to the APPE Committee office within 7 days of the completion of each rotation

Unsatisfactory (Fail)	C Grade	B Grade	A Grade
Below 70%	70% - 79%	80%-89%	90% -100%

E. Attendance

- Complete attendance is mandatory of all students for every rotation
- Students are expected to be present at the assigned practice site at least 40 hours per week (8 hours per day) from 8 a.m. till 4 p.m. during each rotation as per Preceptor schedule.
- Additional hours beyond this schedule may be required in order to complete assignments or other rotation activities.
- The duration of the holidays is of one week each for Eid-ul-Fitr and Eid-ul-Adha only.
- Students do not have excused absence from the assigned practice site unless if a holiday, inclement weather or any other event occurs which closes the training site.
- If a student is ill or has a personal emergency, the APPE committee secretary and Preceptor must be contacted as early as possible on or before the day in question. Documentation from a physician or relevant third party may be requested for these types of absences.
- Request for absence or time off for any reason other than personal or family emergency and student illness must be subject to approval at least two weeks by both APPE committee secretary and the Preceptor
- If a student does not complete the entire 5-week experience other than Pharmacy Practice Rotation which is of 10-week duration, during the assigned timeframe for any reason, the student will be required to complete the same 5-week experience.
- All student rotation schedules are coordinated through the APPE committee secretary. Any student who makes an unauthorized changed in their rotation without the approval of the APPE committee secretary will fail the rotation.
- Schedules of student rotations may only be modified at the discretion of APPE committee secretary.
- Students are encouraged to participate in College of Pharmacy-sponsored events like conferences and seminars, which may be scheduled during rotation hours. In order to receive excused absence to attend any of these events, each student attending the event must individually submit a request, in writing to the APPE committee secretary at least two week prior to the event. Students may be required to make up these hours.

F. Student Behavior

Students are expected to conduct themselves in a highly professional and ethical manner at all times of rotation. Each student must understand that their behavior is a reflection upon themselves, the College of Pharmacy and the Qassim University. Unprofessional and/or unethical behavior will result in disciplinary action by APPE committee of the college, which may result in failing of the rotation and/or any action deemed appropriate by the committee. Preceptors are encouraged to report any unprofessional and/or unethical behavior of students.

V. Pharmaceutical Care

In every rotation, the intern utilizes the knowledge and skills to meet patients' health need through optimization of all the concerns about the drug use. The proper pharmaceutical care is achieved by establishing harmony and collaboration between intern pharmacist and other healthcare providers. There are several sequential steps to realize the process of the pharmaceutical care on the ground, these steps involve:

- Establishing therapeutic relationship with the patient.
- Record and evaluate patient-specific data including current and past medical and drug histories and identify actual and potential drug-related-problems (DRPs) based on evidence based guidelines and up-to-date literature
- Identify and discuss potential drug-disease, drug-drug, drug-lab value and drug-dietary interaction and make appropriate recommendations
- Monitor daily progress of patient's disease state(s) and drug therapy and identify any problems associated with laboratory data and subjective and objective findings and recommend appropriate therapeutic intervention
- Apply pharmaceutical knowledge and cognitive skills to individualize the therapeutic regimen (best drug, dose, formulation, regimen, schedule, etc.) based on the patient-specific data.
- Apply skills related to utilizing the drug information resources to answer questions related to drug use and toxicity.
- Provide organized and individualized written and oral counseling to patients about their prescribed drugs.

VI. Inter-professional Relationships

The intern should play a vital and crucial role during the rotation to actively communicate with other health-care providers. This communication involves:

- Receiving and accepting prescription order from the prescribers.
- Clarifying unusual dosage.
- Requesting clarification in cases of possible therapeutic problems, errors of omission or commission, and communicating therapy recommendations to the Prescriber.
- Consulting with the prescriber in cases of drug under or over utilization by patient.
- Contacting the Prescriber in case of suspected adverse drug reaction or side effect/toxicity and interactions.
- Providing drug information, e.g. composition, availability, dose, use, classification, nomenclature, administration techniques and special formulations.
- Informing the practitioner of any prescriptions that may have been adapted or renewed through continued care.

VII. Advanced Pharmacy Practice Experiences (APPE)

A. Introduction

The primary purpose of the Advanced Pharmacy Practice Experiences (APPE) of the College of Pharmacy, Qassim University is to provide an experiential learning environment for the students to develop

sufficient, relevant, and experiential knowledge base to utilize appropriate resources necessary to provide direct patient care regarding individualized therapeutic planning, intervention and evaluation.

Internship students must master the clinical skills necessary to assume accountability and responsibility for therapeutic outcomes in the process of providing pharmaceutical care. The program fosters clinical skills in students to assume responsibility and accountability for therapeutic outcomes in the process of providing pharmaceutical care.

The program develops professionalism and interpersonal skills in students to work as an effective team member of the health care providers, which is necessary for the provision for the provision of optimal patient care and pharmaceutical services.

B. Internship Rotations:

The internship is a mandatory 52 weeks period divided into core and elective rotations as follows: Each rotation of 5 Weeks duration.

Core Rotations (Clinical Rotations)	Core Rotations (Non- Clinical Rotations)
Cardiology	Pharmacy Practice I (Inpatient/Outpatient)
Internal Medicine	
Critical Care Unit	
Pediatrics(Neonates, Infants or Children)	
Infectious Diseases	
Elective Rotations*(Clinical)	Elective Rotations*(Non-Clinical)
Oncology	Drug and Poison Information
Neurology	Investigational Drug Services
Hematology	Advanced in-patient pharmacy practice use
Solid Organ Transplantation	Ambulatory Care Clinics
Nephrology	Medication Safety
Geriatrics	Pharmacy Automation and Informatics
Endocrinology	Pharmacy Practice II (Administration/DUE/P&T/ Formulary Management and Investigational Drug Services)
Psychiatry	Total Parenteral Nutrition
Evidence Based Medicine	
Pain Management	
Surgery	
Pulmonary	

- Students can choose 2 clinical and 2 non clinical elective rotations
- From Non clinical elective students can choose either pharmacy practice II /Investigational Drug Use/Advanced in-patient Pharmacy practice rotation.
- Plus one more non clinical rotation
- The Elective rotations are available based on the training site preceptor availability and / or number of the trainees allowed.

C. Compliance with Training Site/Facility Policies and Procedures

The students of College of Pharmacy, Qassim University perform one year (52 weeks) APPE program at the King Faisal Specialist Hospital of Riyadh which is the primary training facility. At the start of the APPE Program, Preceptors at the facility give orientation to the students about the laws and regulations of working professionally in the hospital, discipline, familiarization with the APPE manual and ethics of professional practice

- Students must comply with all policies and procedures of the practice site. Inappropriate use of or damage to practice site property may result in disciplinary action by either facility administration or the College, or both
- Students are allowed to start the APPE program upon successful completion of graduation requirement and a letter from the College that he/she can start the APPE program following the coordination with the APPE committee.
- Interns are allowed to start training after obtaining a letter from the College documenting that he/she finished the graduation requirements.
- He/she can then start internship following the coordination with the Internship Committee and the clinical coordinator.
- Changes are not allowed following the distribution of the timetable: only strictly in the situation where there is a replacement and agreement of departments concerned.

Delay in Starting of the Training: (will be reviewed during departmental meeting)

- The intern will not be allowed to start training after 6 months from date his/her graduation requirements were fulfilled.
- If the duration of delay exceeded 6 months and no longer than one year, he/she shall be re-examined in all the mandatory internships. If fails, he/she shall be re-examined after a month, and during that period he/she is advised to come to the training site on regular basis to prepare for the second examination, and will not allowed to start internship before passing the examination.
- If the duration of his delay is more than one year, he/she shall be re-examined in both mandatory and elective internship. If fails, he/she shall be re-examined one month later and be advised to come to the training site on regular basis to prepare for the second examination, and will not allowed starting before passing the examination.

Halting of Training: (will be reviewed during departmental meeting)

- If, for acceptable reasons, the training is halted for a period no longer than 6 months, he/she shall continue training and the duration of halt shall be rewarded at the end of the internship period.

- If, for acceptable reasons, the period of halt exceeded 6 months, but less than one year, he/she shall repeat the core internship.
- If the period exceeds one year, he/she shall repeat the whole internship period.
- In case he/she fails, he/she shall be re-examined in internship. If fails, he/she shall be re-examined one month later and be advised to come to hospital on regular basis to prepare for the second examination, and will not allowed starting internship before passing the examination.

Pre-requisite for the rotations:

- The core internship is of 35 weeks and starts with Pharmacy Practice, which must be accomplished first and then the trainee must choose any of the remaining internship after consultation with the coordinator.
- The elective rotations are of 15 weeks can be arranged following the agreement of the concerned departments and the Internship Committee.
- Intern can choose 3 specialty of 5 weeks in:
 1. Pharmacy Practice II (Administration/DUE/P&T)
 2. Drug and Poison Information (DPIC)
 3. Formulary Management and Investigational Drug Services
 4. Oncology
 5. Hematology
 6. Surgery
 7. Transplantation
 8. Ambulatory Care Clinics
 9. Nephrology
 10. Pain Management
 11. Geriatrics
 12. Neurology
 13. Endocrinology
 14. Pulmonary
 15. Psychiatry
 16. Medication Safety
 17. Evidence Based Medicine
 18. Pharmacy Automation and Informatics

Pharmacy Practice (I) Rotation

Objective of the Rotation:

This rotation is designed to provide exposure to a professional field and an understanding of professional etiquette by developing professionally relevant competencies and relationships in the pharmacy professional settings. The interns will be trained on:

- Experience in pharmacy administration
- Unit dose system and dispensing of medications
- Understand the philosophy of the institutional pharmacy department and its role in patient care and practice
- Opportunity to explore the health-care team approach to patient care
- Role of pharmacists in professional decision making

Learning outcomes:

Upon successful completion of this rotation, the intern should be able to:

- Follow the institution's policies and procedures to maintain the accuracy of the patient's medication profile.
- Develop initiative in preventing, identifying, and resolving pharmacy-related patient care problems.
- Prepare and dispense medications and appliances according to existing Standards Operating Procedures (SOPs) and the organization's policies
- Define and describe the role and function of members within the pharmacy department
- Demonstrate and interpret pharmacy operations of the following:
 - a. Appropriateness of medication orders and processing
 - b. Automated medication systems
 - c. Inspection and filling of medication storage units
 - d. Inventory management
 - e. Procedure for disposal of expired medication
- Describe and demonstrate medication administration in the institutional setting include all of the following:
 - a. Medication administration records
 - b. Narcotic count sheets
 - c. Different routes of administrations
- Observe and perform:
 - a. Sterile products compounding
 - b. Application of aseptic technique
 - c. Pharmaceutical calculations

- d. IV admixture technique
- Observe and demonstrate clinical services of the following:
 - a. Medication monitoring
 - b. Therapeutic drug monitoring
 - c. Therapeutic recommendations
 - d. Medication reconciliation
 - e. Patient education and discharge counseling
 - f. Medication Error reporting
 - g. Adverse drug reaction reporting

Pharmacy practice (II) Rotation

Objective of the Rotation:

The aim of this rotation is to prepare the interns to develop expert skills and competencies in pharmacy practice leadership. The interns will be trained on:

- Understanding the ability to make clinically sound and cost-effective drug formulary
- Monitor the pharmaceutical pipeline of drugs and drug utilization
- Familiar with standard pharmaceutical care guidelines
- Learn about investigational new drugs (IND) for inpatient studies

Learning outcomes:

Upon successful completion of this rotation, the intern should be able to:

- Define the organization's medication-use system and its vulnerabilities to adverse drug events (ADEs).
- Describe the process for developing, implementing, and maintaining a formulary system.
- Define and obtain a working knowledge of the rules and regulations governing the prescribing, distribution, acquisition, and dispensing of Investigational New Drugs (IND)
- Outline detail knowledge about current pricing information and support highly informed decisions about brands versus generics as well as included and excluded products

Critical (Intensive) Care Unit (ICU) Rotation (Medical/Surgical/Cardiovascular ICU)

Objective of the Rotation:

The aim of this rotation is to prepare and facilitate the intern's learning and cognitive skills in a critical care environment in order to understand the needs of patients in a critical care setting and apply evidence based management with pharmaceutical care perspective. The interns will be trained on:

- Professional skills in a critical/intensive care environment.
- Understanding and analyzing of drug and disease related problems in a critical care setting and developing abilities to solve them with evidence based therapy

Learning outcomes:

Upon successful completion of this rotation, the intern should be able to:

- Interpret hemodynamic parameters and acid-base status in critically ill patients.
- Differentiate between presentation of and treatment strategies for hypovolemic, obstructive, and distributive shock
- Discuss the appropriate use of fluids, vasopressors, antibiotics, and corticosteroids in patients with severe sepsis, or septic shock
- Discuss strategies to optimize the safety and efficacy of therapeutic hypothermia for patients after cardiac arrest or any other condition
- Discuss the different strategies in managing bleeding patients
- Describe the different types of cardiovascular and the non-cardiovascular surgeries and how to manage those patients
- Recommend therapeutic options to prevent stress ulcers, venous thromboembolism, hyperglycemia, and ventilator-associated pneumonia in critically ill patients
- Perform therapeutic drug monitoring in critically ill patients for aminoglycosides, vancomycin, phenytoin, digoxin and all drugs having narrow therapeutic index and which have a major effect on kidney and liver function of a patient.
- Identify and solve the drug related problems of the cases of critically ill patients.

Internal Medicine Rotation

Objective of the Rotation:

This rotation is designed to enhance the intern's ability to provide comprehensive medication therapy management for acutely ill patients in a hospital or clinic setting. In this rotation, the intern will be empowered with the knowledge and clinical skills to provide patient-specific therapeutic interventions and provide pharmaceutical care to the patients admitted to internal medicine departments. The interns will be trained on:

- The goals of treatment for each disease in internal medicine specialty.
- Design of treatment plan and selection of the most appropriate pharmacologic and non-pharmacologic management of diseases in this specialty based on the up-to-date, evidence-based clinical guidelines.
- Relationship between the pathophysiology of the disease(s) and the mechanism(s) of action of the drugs.
- Identification of potential and actual drug related problems with the rational, reasonable and practical solutions to the drug related problems in patient with diseases in this specialty.
- The treatment outcomes of each disease in this specialty.
- Designing a monitoring plan of drug efficacy, adverse effects, compliance, and drug interactions for patient drug therapy.
- Pharmacokinetic and therapeutic drug monitoring (TDM) for drugs in this specialty (e.g. digoxin, warfarin etc).
- Team-based learning and effective communication skills.

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Develop the goals of treatment for patients with disease in internal medicine specialty.
- Describe the rationale, benefits, drug interactions, adverse drug reactions and appropriate use of combination drug therapy for managing patients with diseases in this specialty.
- Recommend/design a patient specific treatment plan including pharmacological and non-pharmacological management based on the most updated evidence-based clinical guidelines.
- Identify drug related problems and risk factors for diseases in this specialty and provide appropriate solutions.
- Develop a specific monitoring plan for patients in this specialty including the desired outcomes, drug efficacy and drug safety.

- Demonstrate ability to provide patient education and counseling.
- Demonstrate ability to work and communicate effectively (verbal and written) during the rotation with the healthcare professionals and the patients.

Common diseases in this specialty:

- Hypertension
- Heart failure (acute & chronic)
- Thromboembolic disorders
- Coronary artery disease: (chronic stable angina)
- Acute coronary syndromes: (unstable angina & acute myocardial infarction)
- Arrhythmias
- Dyslipidemias
- Peripheral Vascular Disorders
- Cardiogenic shock
- Endocarditis
- Diabetes Mellitus
- Anemia
- Thyroid disorders
- Pain management
- Asthma
- COPD

Cardiology Rotation

Objective of the Rotation:

The aim of the cardiology rotation is to provide the interns with knowledge and skills in cardiovascular diseases and improving their interns abilities to participate actively in treating, designing and monitoring of therapies in cardiology by analyzing and applying evidence-based therapy and explaining of monitoring parameters including efficacy, toxicity, actual and potential adverse drug reactions and drug interactions. The interns will be trained on:

- The goals of treatment for each disease in cardiology.
- Design of treatment plan and selection of the most appropriate pharmacologic and non-pharmacologic management of various cardiovascular diseases supported by up-to-date, evidence-based clinical guidelines
- Relationship between the pathophysiology of the cardiovascular disease(s) and the mechanism(s) of action of the drugs used in this specialty
- Identification and practical solution of potential and actual drug related problems in patient with cardiovascular diseases.
- Learn to design the pharmaceutical care plan with focus on treatment outcomes for cardiovascular diseases
- Learn to monitor plan of drug efficacy, adverse effects, compliance, and drug interactions for patients on cardiovascular drug therapy.

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Recommend patient-specific pharmacologic therapy for the management of different cardiovascular diseases, with an emphasis on mortality-reducing agents and their target doses.
- Develop an evidence-based pharmacologic regimen and monitoring plan for patients with different cardiovascular diseases.
- Develop a pharmaceutical care plan for patients of hypertension, hyperlipidemia, heart failure, coronary artery diseases and cardiomyopathy.
- Identify patients at risk of atherosclerotic cardiovascular disease (ASCVD) according to the pooled cohort equation to estimate the 10-year ASCVD risk and determine in which patients statin therapy should be initiated..
- Specify the drug-drug interaction, if any, of different classes of anti-hypertensive drugs, anti-hyperlipidaemic drugs, drugs used in Coronary Heart Diseases, Heart Failure and Arrhythmias.

- Design a management therapeutic plan for different compelling disease of Dyslipidemias, Heart Failure, Cardiomyopathy, Cardiogenic Shock, Arrhythmias and Cardioembolic disorders.
- Identify the toxicology of the drugs used in different cardiovascular diseases
- Identify the local administration of drugs to cardiovascular system.
- Describe how the anti-coagulation clinic works and how it has been established.
- Calculate different parameters of International Normalized Ratio (INR), the techniques involved in it and how it can be measured.
- Perform measuring INR of patients and adjusting the dose of anticoagulants accordingly.

Infectious Diseases (ID) Rotation

Objective of the Rotation:

This rotation is designed to enhance the intern's ability to provide comprehensive and up-to-date medication therapy management for patients with infectious diseases. The students will be trained on:

- Achieve goals of treatment specific to infectious diseases mainly caused by Bacteria, Virus, Protozoa and Fungi.
- Gain knowledge to select the most appropriate individual patient specific antibacterial, antiviral, antiprotozoal and antifungal treatment of various infectious diseases supported by up-to-date, evidence-based clinical guidelines.
- Understand the pathophysiology of the infectious disease(s) and the mechanism(s) of action of the drugs used in this specialty
- Understand the source and different type of pathogens causing infection.
- Identify potential and actual drug related problems in patient with infectious diseases.
- Learn to design a monitoring plan of drug efficacy, adverse effects, compliance, and drug interactions for patients with infectious diseases.

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Describe and recognize appropriate treatment of patients with upper and lower respiratory tract infections, urinary tract infections, central nervous system (CNS) infections, skin and soft tissue infections, osteomyelitis, intra-abdominal infections, and endocarditis
- Develop rational of antimicrobial therapy with proper dosing, frequency and schedule.
- Recommend appropriate prophylaxis and preventive therapies for infectious diseases.
- Discuss pathophysiology of the infectious diseases, including signs and symptoms, clinical presentations, diagnosis, common laboratory findings as well as complicating factors.
- Apply pertinent pharmaceutical principles when evaluating a therapeutic problems such as adjustment of the dose or regimen for certain drugs in the presence of renal or liver dysfunction or other co-morbid conditions affecting drug absorption, distribution, metabolism and elimination.
- Monitor patients' progress with regard to therapeutic objectives to achieve the outcomes of pharmaceutical care.
- Develop and explain the most effective therapeutic plan to combat resistant strains in antimicrobial therapy
- Define policies and procedures for preparation and administration of admixtures, chemotherapy, and antimicrobial therapy

- Discuss and compare specific antimicrobial therapy concerns and needs of different types of patients (e.g. neonatal, pediatric, elderly, critically ill patient and septic patient)
- Design treatment plan based upon evidence based medicine, latest guidelines and literature review for the following but not limited to these diseases:
 1. Viral hepatitis
 2. Bacterial Gastroenteritis
 3. Urinary tract infections
 4. Sexually transmitted diseases
 5. Community –acquired, hospital acquired and nosocomial pneumonia
 6. Mycobacterium tuberculosis
 7. HIV related infections
 8. Fungal infections
 9. Soft tissue and bone infections
 10. Malarial and parasitic infections
 11. CNS infection
 12. Brucellosis
 13. Sepsis and septic shock

Parenteral Nutrition support clinical rotation

Description of the Rotation:

Parenteral Nutrition support clinical rotation is a five-week hospital-based clinical experience with emphasis on nutrition support. The PN intern will learn the required responsibility for maintenance or restoration of optimal nutritional support, designing and modifying management according to the patient needs.

Objectives:

- Develop knowledge in fluid requirements by age/disease status
- Recognize the management of malnutrition, including nutritional deficiencies associated with gastrointestinal and hepatobiliary dysfunction as well as the gastrointestinal luminal, hepatic and pancreatic consequences of overweight and obesity.
- Understand the principles and procedures of giving enteral versus parenteral nutrition.
- Recommend an appropriate nutritional regimen for patients based on their unique clinical status, and recommend appropriate modifications to an existing regimen
- Monitor drug therapy prospectively for potential drug-drug, drug-laboratory test, drug-nutrient and drug-disease state interactions and recommend appropriate modifications in drug therapy, when appropriate, to avoid undesirable interactions
- Familiarize with providing sound and efficient nutrition care as a part of pharmaceutical care for inpatients in need of nutrition support therapy.
- Gain the required skills to understand the impact of electrolytes imbalances and be able to manage it

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Demonstrate skills and proficiency to identify, interpret and suggest appropriate patient specific laboratory tests required to monitor clinical nutrition for all age groups
- Identify and solve nutrition and drug related problems associated with the administration of enteral and parenteral nutrition
- Be familiar with the policies and procedures of aseptic technique for preparing IV admixtures
- Demonstrate competence in estimating and assessing the patient's nutritional requirements individualization.
- Discuss and compare specific parenteral therapy concerns and needs of different types patients (e.g. neonatal, pediatric, elderly, critically ill).
- Evaluate and optimize drug therapy outcomes by assessing:

- a. Rationale of the total parenteral nutrition.
- b. Appropriateness of parenteral nutrition use, dose, route, and schedule.
- c. Possible side effects and complications of parenteral Nutrition(Pharmaceutical, metabolic and mechanical)
- d. Identifying drug-laboratory and drug nutrients interaction

Pediatrics Rotation

Objective of the Rotation:

The aim of this rotation is to develop intern's knowledge, skills, clinical reasoning and decision making abilities to provide pharmaceutical care to pediatric patients (neonates, infants and children) and be able to recommend safe and effective evidence based drug therapy. The students will be trained on:

- Understand the latest drug therapy for treating pediatric patients with different diseases and disorders.
- Acquire the skills, knowledge and attitude to develop autonomy and provision of appropriate levels of supervision in pediatric clinical pharmacy
- Understand the pharmacokinetics and pharmacodynamics, psychosocial influences on pediatric drug therapy selection and differences of treatment option from adult.
- Understand the appropriateness of drug therapy in pediatric illnesses with different dosing, frequency and formulations.

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Describe the most common pathogens associated with neonatal and pediatric sepsis and meningitis and current therapeutic options for their management.
- Identify the drugs available for preventing and treating respiratory syncytial virus.
- Describe the most common causative organisms of otitis media in children and its potential treatment options.
- Discuss the differences in anticonvulsant drug's pharmacokinetics and adverse effects between children and adults.
- Discuss pathophysiology of the selected pediatric diseases, including signs and symptoms, clinical manifestations, common laboratory findings as well as complicating factors.
- Monitor patient's progress with regard to therapeutic objectives to achieve the outcomes of pharmaceutical care.
- Evaluate and solve drug related problems associated with problems pediatrics pharmacotherapy.

- Calculate the pediatric dosing protocols and regimens.
- Discuss the latest guidelines and evidence based pharmacy while evaluating the therapeutic care plan and choice of drugs related to pediatric treatment.
- Identify the recommended pediatric immunization schedule and barriers

Geriatrics Rotation

Objective of the Rotation:

The aim of this rotation is to build professional learning and critical thinking skills in interns regarding geriatrics pharmacotherapy. The students will be trained on:

- Understand and assess unique therapeutic requirements of elderly patients
- Recognize poly-pharmacy and know specific medications that might be adjusted or discontinued in geriatric patients.
- Describe physiologic changes that occur as a result of aging, and discuss how these changes effect the pharmacokinetic and pharmacologic action(s) of medications in the elderly patient..
- Understand the appropriateness of drug therapy in geriatric illnesses with different dosing, frequency and formulations.
- Describe the role and function of the clinical pharmacist as a member of the geriatric healthcare team

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Identify age-related pharmacokinetic and pharmacodynamic changes in older adults.
- Evaluate the pharmacotherapeutic regimens of older adults to support optimal physical and mental function.
- Identify inappropriate medication prescribing in older adults.
- Recommend appropriate pharmacotherapy for patients with dementia.
- Evaluate the risks and benefits of antipsychotic and antidepressant use in older adults with psychiatric and depressive disorders
- Differentiate among the types of urinary incontinence in elderly and recommend appropriate treatments.
- Recommend an appropriate benign prostatic hypertrophy treatment based on individual American Urological Association Symptom Index.
- Recommend appropriate analgesic therapy for older adults
- Describe the pathophysiology, rational therapeutic interventions, and monitoring parameters for the following common diseases encountered in the elderly:

- a. Angina Pectoris
- b. Bowel/Bladder Incontinence
- c. Common Anemias
- d. Congestive Heart Failure
- e. Dementias
- f. Depression
- g. Diabetes Mellitus
- h. Hypertension
- i. Hypnotic Use in the Elderly
- j. Arrhythmias
- k. Insomnia
- l. Osteoporosis
- m. Parkinson's Disease
- n. Peptic Ulcer Disease
- o. Pneumonias
- p. Pressure Sores
- q. Transient Ischaemia Attacks (TIA)
- r. Urinary Tract Infections
- s. Seizure Disorders
- t. Bipolar Illness & Schizophrenia

Drug & Poison Information (DPIC) Rotation

Objective of the Rotations:

The aim of this rotation is to enhance the intern's knowledge and cognitive and critical thinking skills in understanding systemic approach to retrieving and evaluating drug information along with an appreciation of the role of the drug information specialist utilization in multidisciplinary patient care needs. The students will be trained on:

- Understand and review comprehensive, unbiased, evidenced-based medication information
- Formulate responses to drug information requests based on analysis of the literature.
- Assess the effectiveness of drug information recommendations
- evaluating appropriateness and cost-effectiveness of drug therapy
- Able to report and evaluate adverse drug reactions; disseminating drug safety alerts; and participate in the medication use evaluation program
- Maintain updated and appropriate drug information resources and support the professional development of pharmacy staff

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Produce a search strategy for answering questions posted to a drug information center and understand the principle of drug and poison information center and the role of a pharmacist as drug information provider.
- Describe the required processes and materials to establish drug Information center or service
- Differentiate between primary, secondary and tertiary literature that are usually used in answering drug and poison information requests and secondary literature including IDIS (IOWA system), MICROMEDEX, Medline, and Internet
- Identify and analyze the strengths and weaknesses of available resources (primary, secondary and tertiary references) and select the appropriate resources/databases.
- Define various types of requests and the required background information that should be extracted for each type.
- Prepare drug monographs as a part of the student experience in conducting performing drug and poison information services
- Record about drug induced hepatotoxicity, nephrotoxicity and hematological disorders.
- Evaluate responses to drug and poison information requests verbally and in a written format.
- Describe various types of drug poisons, information about antidotes and snake and other poisoning from animals, plants and food products.

Pain Management Rotation

Objective of the Rotation:

This rotation is designed to develop expert competencies and skills needed to provide pharmaceutical care to patients in acute and chronic pain and palliative care. The students will be trained on:

- Understand the symptomatology, pathophysiology, diagnostic procedures and treatment options for patients with acute and chronic pain and in palliative care.
- Review and evaluate comprehensive evidenced-based medication to manage individualized patient therapy in pain management.
- Able to apply principles of acute pain management and understand the fundamentals of caring for patients with acute, chronic, and cancer pain, and their management and side effects.
- Assess the knowledge in chronic pain management and its pharmacotherapeutic plan

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Identify different kinds of pain and its management including but not limited to somatic pain, cardiac pain, muscular pain, bone pain, visceral pain, and pain after trauma, epigastric pain and headaches.
- Provide recommendations for medication based upon pharmacokinetic and pharmacodynamic principles that used in pain management.
- Provide appropriate monitoring parameters for the chosen treatment plan (including efficacy, toxicity, side effects, and potential drug interactions).
- State the alternatives of non-pharmacologic treatment options in pain management.
- Define and understand the difference between: addiction, tolerance, physical dependence, psychological dependence and kindling (treatment resistance)
- Optimize the outcomes of pain management and palliative care patients through provision of evidence-based patient-centered medication therapy.

Ambulatory care Rotation

Objective of the Rotation:

This rotation is designed to impart communication and interpersonal skills in interns to provide highest quality ambulatory care to patients through development of clinical expertise and data to inform clinical care decisions. The students will be trained on:

- Review patient specific data and medication history and assess patient's current clinical condition.
- Assess appropriateness of physician medication orders by identifying possible dosing, scheduling, caution and contraindication
- Gain experience in provision of integrated, accessible health care services by pharmacists who are accountable for addressing the outpatients' medication needs.
- Develop active and professional communication skills both written and oral with patients and other healthcare providers.
- Able to counsel the patients about the optimal and rational use of their medications.

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Recommend patients to suitable changes in the drug therapy, diet, or the life style modifications suffering from acute and chronic diseases.
- Apply disease state knowledge to individual patients to evaluate existing medication therapies
- Interpret the patient-specific data and assess the patient's clinical status.
- Define the purpose of medication usage review.
- Demonstrate knowledge of medical conditions commonly encountered in ambulatory care settings.
- Recommend an informed interventions and changes in drug regimen and non-drug interventions.
- Organize patient information into a SOAP note format for documentation of patient interactions and patient care interventions according to rotation site procedures
- Counsel the patients about their drug use and foster the drug adherence
- Demonstrate knowledge of medical conditions commonly encountered in ambulatory care settings. If the rotation site is a specialty clinic, students should demonstrate knowledge of the disease states pertinent to that particular clinic

Evidence-Based Medicine Rotation

Objective of the Rotation:

This rotation focuses on familiarizing the intern with the critical thinking skills and activities to design pharmacotherapy based on evidence based medicine by using latest guidelines and research appropriately. The students will be trained on:

- Gain experience that the decisions about healthcare are based on current, valid and relevant evidence within the context of available resources.
- Understand the principles of evidence based practice in clinical pharmacy, recognize it in action, implement evidence-based policies and have critical attitude to their own practice and evidence
- Perform search in the relevant, up to date, and reliable databases and sources of drug information and document and state the references and citations
- Effectively communicate with the inquirers and critically appraise the retrieved literature

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Practice techniques to identify and validate Patient-Oriented Evidence that matters (POEMs) in Pharmacy-based practice, particularly in hospital settings.
- Discuss building evidence-based infrastructure within a healthcare organization; pertinent to medications.
- Apply evidence-based medicine critical appraisal techniques to identify and evaluate different medical information sources for relevance and validity.
- Perform in hands-on training on sources of information, including internet resources as well as latest resources
- Define methods of developing, identifying, evaluating and locally adapting clinical practice guidelines.
- Discuss critically appraise papers on economic analysis, cost effectiveness and decision analysis.
- Define critically appraise papers reporting qualitative research.

Medication Safety Rotation

Objective of the Rotation:

This rotation is designed to provide the intern with critical thinking and problem solving skills of identifying and preventing medicines risks and the possible medication errors. The students will be trained on:

- Understand clinical skills necessary to design, implement and monitor rational, safe, effective and individualized pharmaceutical care plan
- Assure that all patient-specific and medication-specific information is necessary to support the safe medication use.
- Provide appropriateness of using the automation in the preparation, storage and dispensing of medications.
- Establish inter-professional relationship with the multidisciplinary team in the administration the therapeutic medicine including effective dosage, side effects, precautions and contra-indications of medicines.
- Ensure the right patient receives the right drug, in the right dose, by the right route, at the right time.
- Ensure all medicinal products are stored in accordance with the patient information leaflet and in accordance with any instruction on the label.

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Develop strategies to improve the health care system's monitoring and reporting of adverse events.
- Develop effective communicate with other healthcare professionals in order to improve the healthcare system's medication use process policy and procedures.
- Describe appropriate, safe, and correct preparation and dispensing of medications
- Explain conditions that may affect the efficacy of the medication, such as dosages, route of administration, patient weight, renal and hepatic functioning, and other important patient characteristics, such as pregnancy.
- Evaluate potential interactions between a newly prescribed medication and other medications already being used by the patient.
- Define the potential risk of high-alert medications.
- Define the patient's current medication is continued and that additional medication used during the hospital stay is compatible with the patient's current therapeutic regimen.
- Perform medication reconciliation during periods of care transition in critical care patient

Nephrology Rotation

Objective of the Rotation:

This rotation is designed to facilitate the intern to develop critical thinking skills and knowledge necessary to assess, prevent, and manage the common renal diseases, namely, acute kidney injury (AKI) and chronic kidney disease (CKD). In addition, it familiarizes the intern with the concept of dose adjustment in patients with renal diseases. Moreover, this rotation introduces the internship student to the medicines used in hemodialysis. The students will be trained on:

- Understand symptomatology, physical findings, pathophysiology, diagnostic procedures, laboratory test results, and treatment options for all patients with acute and chronic renal failure.
- Clinical skills necessary to design implement and monitor rational, safe, effective and individualized pharmaceutical care plan for patients with acute and chronic kidney disease.
- Accurately analyze the patient data to identify different stages of renal disease, renal function, and fluid and electrolyte status.
- Review the need for adjusting the drug dosage in patients with chronic kidney disease and, if needed, change the dosage regimen based on informed and solid knowledge of the pharmacokinetic calculations

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Describe acute kidney injury (AKI) as pre-renal, intrinsic, or post-renal, based on patient history, physical examination, and laboratory values.
- Identify risk factors for AKI and CKD.
- Formulate preventive strategies to decrease the risk of developing AKI in specific patient populations and make its therapeutic plan.
- Identify medications and medication classes associated with acute and chronic kidney damage.
- Describe characteristics that determine the efficiency of removal of drugs by dialysis.
- Classify the stage or category of chronic kidney disease (CKD) based on patient history, physical examination, and laboratory values.
- Identify risk factors for the progression of CKD.
- Formulate strategies to slow the progression of CKD.
- Calculate doses according to the stages of kidney failure.

Pharmacy Automation and Informatics Rotation

Objective of the Rotation:

This rotation is an experience that exposes students to the evolution of an organization's medication-use systems by applying pharmacy informatics principles, standards and best practices. The students will be trained on:

- Understand of the basic language and concepts of information technology (IT) thereby
- Understand pharmaceutical services through the Electronic Health Records (EHRs) and Health Information Technology (HIT) programs.
- Adopt knowledge and skills of e-prescribing technologies and current EHR and its regulations
- Understand integration of medicine management technology in pharmacy practice to provide clinically focused, safe and effective pharmacotherapy to patients

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Develop and oversee medication management-related system's databases
- Identify, suggest solutions to, and resolve system or application problems
- Define the current EHR technologies and programs.
- Apply the roles of pharmacy practice in the current EHRs in order to provide safe, and effective, economical patient care.
- Discuss reducing the opportunity for medication errors and ADRs.
- Perform participation in multidisciplinary HIT leadership forums that evaluate e-prescribing system safety, effectiveness, vulnerabilities, and opportunities for improvement.
- Describe the pharmaceutical interventions in health care delivery.

Psychiatry Rotation

Objective of the Rotation:

The purpose of this rotation is for students to gain professional skills in the area of psychiatric pharmacotherapy. The psychiatry rotation affords interns the opportunity to effectively participate in the patient care decision-making process. The students will be trained on:

- Understand psychiatric patient's pharmacotherapeutic needs by utilizing evidence based pharmacotherapy
- Gain knowledge and make decision about drug selection, dosing regimen design, frequency of drug administration, therapeutic monitoring, and attainment of therapeutic goals and avoidance of adverse reactions.
- Understand common diseases in psychiatry like but not limited to depression, anxiety disorders, substance abuse, bipolar disorder and psychotic disorders and their treatment modalities.

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Describe the role and responsibilities of psychiatric pharmacists in institutional or ambulatory care practice settings
- Describe pharmaco-therapeutic options for managing the following psychiatric disorders: major depression, bipolar disorder, schizophrenia, anxiety disorders, insomnia, and substance abuse.
- Describe the drugs used to treat these disorders with respect to unique pharmacologic properties, therapeutic uses, adverse effects, and cognitive and behavioral effects.
- Formulate a pharmaco-therapeutic treatment plan when presented with a patient having major depression, bipolar disorder, schizophrenia, anxiety disorder, insomnia, or substance abuse
- Evaluate and review drug selection, dosing regimen design, and therapeutic drug monitoring(TDM) to assess the attainment of therapeutic efficacy and avoidance of adverse reactions, in the context of drugs related problems (DRPs)
- Explain the mechanism of action, pharmacological effects, indications, dosage, side effects cautions and contraindications of drugs used in treatment of:
 - a. Anxiety disorders
 - b. Major Depression
 - c. Panic attacks
 - d. Schizophrenia
 - e. Mood disorders

Pulmonology Rotation

Objective of the Rotation:

This rotation is designed to facilitate the interns to utilize critical thinking and problem solving skills and to develop implement and monitor, rational, safe and effective and individualized pharmaceutical care plans in pulmonary diseases. The students will be trained on:

- Understand the primary and alternative pharmacotherapies and non-pharmacological treatment for the pulmonary diseases especially COPD, tuberculosis, cystic fibrosis, pulmonary fibrosis, asthma, emphysema and pulmonary hypertension
- Familiarize with medications use in pulmonary disorders, its dosing protocols, management guidelines, side effects and monitoring parameters

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Describe the symptomatology, physical findings, pathophysiology, diagnostic procedures and laboratory tests used in pulmonary diseases.
- Describe the primary and alternative pharmacotherapies, and nonpharmacological treatments for the pulmonary diseases especially COPD, Tuberculosis, Cystic fibrosis, pulmonary fibrosis, asthma, emphysema, pneumonia and pulmonary hypertension.
- Provide recommendations for medication dose adjustments in pulmonary diseases based upon pharmacokinetic and pharmacodynamic principles.
- Develop rational to deal with adverse effects of drugs in chronic pulmonary diseases
- Develop abilities to counsel patients on the use of inhaler techniques, cessation of smoking, preparation of asthma charts, monitoring PEFr at home and about potential and actual side effects of medications use in pulmonary diseases.

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Surgery/Trauma Rotation

Objective of the Rotation:

The purpose of this rotation is for interns to gain professional skills in the area of trauma/surgery. This rotation affords interns the opportunity to effectively participate in the patient care decision-making process. The students will be trained on:

- Familiarize with different surgical procedures and the pharmacotherapeutic requirements used in surgical and anesthetic fields.
- Understand the most commonly encountered pharmaco-therapeutic issues in surgery include hemodynamic support (fluids and artificial nutrition), sedation, prophylaxis for veno-thromboembolism and infection. Prevention of postoperative complications such as nausea and vomiting, pain, delirium and infections.
- Familiarize with the pharmaco-therapeutic management accompanying surgical treatment, such as management of intra-abdominal infections.

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Define the role of the most common medical devices used in trauma/surgery
- Describe the role of fluid balance and nutrition in general surgery patients
- Discuss and monitor the role of analgesics, ant nausea and vomiting agents choice of prophylactic antibiotics use in surgical processes
- Provide recommendations for medication dose adjustments based upon recent evidence based guidelines
- Develop ability to discuss the therapeutic management of postoperative complications

Solid Organ Transplantation Rotation

Objective of the Rotation:

This rotation builds up the intern's knowledge and critical thinking skills regarding solid organ transplantation concentrating in depth therapeutic approach, post-transplantation complications and its management. The students will be trained on:

- Collect and organize all patient-specific information needed by the pharmacist to prevent, detect, and resolve medication-related problems and to make appropriate evidence-based, patient-centered medication therapy recommendations as part of the interdisciplinary team.
- Understand and familiarize with the treatment options for patients having solid organ transplantation mainly but not limited to kidney, liver, lungs and heart transplantation.
- Describe the rationale and utilization of immunosuppressive drugs used in pre and post-transplantation.
- Review and familiarize with post-transplant complications like but not limited to post-transplant rejection, delayed graft function, drug toxicities, infections, bone and mineral metabolism and metabolic complications.

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Demonstrate understanding of basic end stage renal disease (ESRD) and/or end stage liver disease (ESLD)
- Demonstrate understanding of the basic concepts of immunosuppressive drugs used for solid organ transplantation,
- Monitor pre and post-transplant drug therapy to individualized patient's condition.
- Evaluate and solve post-transplantation complications including but not limited to acute and chronic transplant rejection, delayed graft function, drug toxicities, infections, bone and mineral metabolism and post-transplant metabolic disorders
- Perform proficiency through literature review, topic discussion, and/or direct patient care experience in common diseases in organ transplantation including, but not limited to:
- Chronic diseases in organ transplant recipients and their pharmacological management:
 - a) Diabetes Mellitus
 - b) Hypertension
 - c) Hyperlipidemia
- Infectious disease complications post organ transplantation and their pharmacological management:
 - a) Bacterial

- b) Fungal
- c) Parasitic
- d) Viral infections
- Non-infectious complications of organ transplantation and their pharmacological management:
 1. Osteoporosis
 2. Polycythemia
 3. Nephrotoxicity
 4. Neurotoxicity

Oncology Rotation

Objective of the Rotation:

This rotation is designed for the intern to gain critical thinking and professional skills to participate in interdisciplinary oncology patient care. The students will be trained on:

- Understand and recommend evidence based pharmacotherapeutic regimen, monitoring plans and pharmaceutical care for patients with cancer
- Organize and evaluate patient specific medical details to prevent, detect and resolve drug related problems.
- Assess and recommend appropriate pharmacotherapy for managing chemotherapy related complications
- Familiarize with various chemotherapy protocols and understanding of the dosing, frequency, dosage forms and adverse effects.
- Understand the pharmacokinetics and pharmacodynamics of cancer medications and dose calculations by body surface area

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Describe and treat most common complications related to cancer chemotherapy like nausea and vomiting, anemia, immunosuppression, allergic reactions, fever, pain management and prophylaxis against infections
- Perform cancer specific patient assessment and develop therapeutic goals
- Utilize available protocols, latest guidelines, medication policies, and/or critical pathways in order to recommend appropriate evidence-based and cost-effective patient specific treatment
- Explain various genetic, gender-related, age-related, and disease-related factors that influence response to cancer-related drug therapy
- Explain the rationale for the standard drug combinations used in the treatment of individuals with cancer.
- Calculate accurately cancer-related medication doses according to body surface area, area under the curve, or other standard methods preferred by the organization.
- Explain the necessity of prescribing supportive medications when chemotherapy is prescribed.
- Provide counseling to cancer patients about their discharge medications and develop specific pharmaceutical care plans and monitoring parameters for them.
- Explain and demonstrate the good aseptic techniques and standard precautions using hazardous drugs.

- Discuss treatment modalities of some common cancers through literature review, topic discussion, and/or direct patient care experience including, but not limited to:
- Breast cancer
- Colorectal cancer
- Acute and chronic leukemia
- Lung cancer
- Lymphomas
- Ovarian cancer
- Prostate cancer
- Brain tumors

Hematology Rotation

Objective of the Rotation:

This rotation is designed to impart interns with professional and critical thinking skills on therapeutic medications and supportive care for the patient and the effects of medication on lab results and diseases management in hematological disorders. The students will be trained on:

- Understand and familiarize with treatment protocols in hematological disorders
- Develop knowledge base of etiology, pathogenesis, clinical presentation, diagnostic criteria, prognosis, common treatment regimens, therapeutic goals, pharmaceutical care plan and monitoring parameters associated with hematological diseases.

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Identify, assess, and recommend appropriate pharmacotherapy for managing common complications of hematology chemotherapy
- Assess and recommend appropriate pharmacotherapy for managing different types of anemia and blood related disorders
- Assess and recommend appropriate pharmacotherapy for managing hematologic emergencies, including severe iron deficiency and low hemoglobin levels.
- Describe and evaluate toxicology of the drugs and its management used in the treatment of blood related disorders.
- Utilize the evidence- based pharmacy & literature evaluation and use critical thinking and decision making in designing the latest management of different types of anemia, thalassemia, hemophilia, sickle cell anemia, aplastic anemia, thrombocytopenia purpura, and other blood related disorders.

Neurology Rotation

Objective of the Rotation:

This rotation is designed to develop critical thinking and professional skills of interns in recognition, diagnosis and treatment of neurological disorders and monitoring of safe and effective use of medications. The students will be trained on:

- Understand and familiarize with pharmacological treatment of patients with neurological diseases
- Develop knowledge base of etiology, pathogenesis, clinical presentation, diagnostic criteria, prognosis, common treatment regimens, therapeutic goals, pharmaceutical care plan and monitoring parameters associated with neurological diseases

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Differentiate between various medications for epilepsy on the basis of their therapeutic use and adverse effects.
- Define the medication and its dose and frequency used in ischemic stroke, hydrocephalus, brain tumor, traumatic brain injury, spinal cord injury/disorders, status epilepticus, epilepsy, guillain barre, and myasthenia gravis.
- Identify the types of patient-specific information the pharmacist requires to anticipate, prevent, detect, and/or resolve medication-related problems and to make appropriate evidence-based, patient-centered medication therapy recommendations for individuals with neurology disorders
- Develop a treatment strategy for different types of epilepsy in children and adults.
- Identify appropriate treatment strategies for primary and secondary stroke prevention.
- Determine the appropriateness of treatment with tissue plasminogen activator for acute stroke.
- Examine common adverse effects associated with the treatment of parkinson disease.
- Differentiate between regimens for acute and prophylactic treatment of migraine, tension, and cluster headaches.
- Identify common adverse effects of disease modifying therapies for multiple sclerosis

Endocrinology Rotation

Objective of the Rotation:

The nephrology rotation provides the intern with an opportunity to manage and assess patients across the spectrum of renal disorders in both the inpatient and outpatient settings. The main aim of this rotation is to the interns with the basic clinical manifestations, pharmaceutical care plans, strategies and management of acute and chronic kidney disease. The students will be trained on:

- Understand and familiarize with treatment protocols in endocrinology disorders
- Develop knowledge base of etiology, pathogenesis, clinical presentation, diagnostic criteria, prognosis, common treatment regimens, therapeutic goals, pharmaceutical care plan and monitoring parameters associated with endocrinological diseases.

Learning outcomes:

Upon completion of this rotation, the intern should be able to:

- Identify and recommend appropriate pharmacotherapeutic management of various endocrine and metabolic disorders, including type 1 and type 2 diabetes mellitus, obesity, and disorders of the thyroid, adrenal, and pituitary glands.
- Effectively compare the various therapeutic agents used in treating endocrine and metabolic disorders.
- Monitoring of pharmacotherapy in patient presenting with disorders.
- Recommend appropriate therapeutic management for secondary complications from diabetes or thyroid disorders.

Appendices

Undertaking Form

I, _____ S/o _____,
I.D No. _____ is an Intern Pharmacist of the College of Pharmacy, Qassim University undertake that, I abide by all the Rules, Regulations and Instructions mentioned in this clerkship manual as written and framed by the College of Pharmacy and as amended from time to time. I shall be responsible for any actions from the authorities, if I fail to oblige the mentioned rules and instructions in the clerkship manual.

Intern Name: _____

Signature _____ Date: _____

Evaluation of the Learning Experience
(To be filled and prepared by intern)

1 = unacceptable, 2 = poor, 3 = acceptable or good, 4 = very good, 5 = excellent

Learning objectives	PLAN (30 POINTS) 5 4 3 2 1
<ul style="list-style-type: none"> I understood the objectives for this learning experience prior to beginning. 	
<ul style="list-style-type: none"> The learning opportunities afforded me during this learning experience matched the objectives specified for this experience. 	
<ul style="list-style-type: none"> Resources I needed were available to me. 	
<ul style="list-style-type: none"> I feel that the preceptor's assessment of my performance on the objectives was fair. 	
<ul style="list-style-type: none"> I was encouraged to further develop my ability to self-assess during this learning experience. 	
<ul style="list-style-type: none"> This learning experience provided me opportunities to provide patient-centered care in a responsible way to my patients. 	
The Preceptor	
<ul style="list-style-type: none"> Was prepared for the rotation and familiar with the expectations and activities of the Internship 	
<ul style="list-style-type: none"> Treated me with respect. 	
<ul style="list-style-type: none"> Encouraged active participation and involved me in appropriate decision making situations under supervision. 	
<ul style="list-style-type: none"> Provided constructive feedback throughout the rotation and suggested areas of improvement. 	
<ul style="list-style-type: none"> Was available to answer questions or participate in discussion. 	

What were the strengths of this learning experience?

What were the weaknesses of this learning experience?

What suggestions can you make to improve this learning experience?

Intern's Name: _____ ID _____

Intern's Signature/Date _____ Date: _____

Supervisor's Signature _____ Date: _____

Rotation Evaluation

(To be prepared by Preceptor)

RESIDENT	ROTATION: UNIT DOSE DISTRIBUTION SYSTEM
NAME:	LOCATION: Central unit dose pharmacy Eat Wing pharmacy
SIGNATURE:	DATE:

RATING SCALE:

- 5 = Outstanding (consistently exceeds expectations)
- 4 = Very Good (frequently exceeds expectations)
- 3 = Effective (consistently meets expectations)
- 2 = Below Average (does not meet expectations)
- 1 = Poor / Unacceptable (frequently does not meet expectations)
- NA = Not applicable

RATING INSTRUCTIONS:

For each performance dimension listed, enter number that best describes employee's overall performance in this program

SKILLS AND PRACTICAL DEMONSTRATIONS REQUIREMENTS		5	4	3	2	1	NA	COMMENTS
1.0	Filling Cassettes							
	1.1 Using computer for cassette filling functions							
	1.2 Generating unit dose fill list report							
	1.3 Defining and using nursing pharmacy medication carts							
	1.4 Understanding the medication "fill list"							
	1.5 Dispensing the correct medication and doses							
	1.6 Understanding charge captures							
	1.7 Generating updated list report							
	1.8 Using the label generation function in the computer							
2.0	Extemporaneous Compounding							
	2.1 Ointments, creams, lotions, or solutions							

	2.2 Drug or liquid dosage forms (pedipods)							
	2.3 Capsule manufacturing							
3.0	Selection of appropriate ingredients for extemporaneous compounding							
4.0	Ability to locate and utilize information for extemporaneous compounding							
5.0	Ability to pre-pack the following medications according to standard pharmaceutical practice:							
	5.1 Tablets, Capsules							
	5.2 Oral Liquids							
	5.3 External Preparations							
	5.4 Powder papers and amino acid preparations							

RATING SCALE:

- 5 = Outstanding (consistently exceeds expectations)
- 4 = Very Good (frequently exceeds expectations)
- 3 = Effective (consistently meets expectations)
- 2 = Below Average (does not meet expectations)
- 1 = Poor / Unacceptable (frequently does not meet expectations)
- NA = Not applicable

RATING INSTRUCTIONS:

For each performance dimension listed, enter number that best describes employee's overall performance in this program.

DIMENSION	RATING
Speed of learning	
Quality of work	
Cooperation and judgment	
Reliability and attitude	
Initiative	
Attendance	
Communication	
Overall performance	

COMMENTS:

Name of Preceptor

Date

College of pharmacy/Qassim University
Rotation Assessment Form

Intern's Name: _____ Preceptor: _____

Rotation: _____ Rotation Dates: _____

Assessment Scale

- [5] - **Excellent** consistently performs above expected pharmacist level **and** displays attributes consistent with an advanced practitioner.
 [4] - **Very Good** often performs at a level above expected pharmacist competency.
 [3] - **Satisfactory** Performs at a pharmacist level. Displays attributes consistent with readiness to enter general practice.
 [2] - **Poor** Often performs at a level below that of expected pharmacist competency.
 [1] - **Deficient** rarely performs at the level expected for a pharmacist. Needs improvement to be ready to enter general practice.
 NA Not applicable or no opportunity to evaluate during this rotation

GENERAL SKILLS AND ABILITIES [*The Intern ...*]

Check appropriate box

1	2	3	4	5	NA	
						1. is punctual, reliable and dependable; fulfills responsibilities; meets expectations
						2. is professional and mature in attitude
						3. demonstrates accuracy and attention to detail in work
						4. is self-directed in undertaking tasks; self-motivated; initiates activities
						5. completes tasks, assignments, and projects on time without prompting
						6. completes assignments and projects that are clearly written and referenced
						7. appropriately prioritizes and organizes tasks
						8. appears motivated to maximize the training experience
						9. demonstrates overall problem-solving abilities
						10. demonstrates confidence; is self-assured; ability to be assertive when necessary
						11. communicates effectively with preceptor and other healthcare providers
						12. accepts and applies constructive criticism; responds to feedback; modifies behaviors
						13. presents in services & lectures, using appropriate format, style, and body language
						14. acts in an ethical manner in accordance with professional code & in patient's best interest
						15. demonstrates professional curiosity; seeks an in-depth understanding of issues
						16. demonstrates desire for self-improvement and life-long learning

CLINICAL MANAGEMENT / JUDGEMENT / KNOWLEDGE

Check appropriate box (see scale below)

1	2	3	4	5	NA	
						17. retrieves / interprets appropriate data from chart or other data bases
						18. Identify and evaluate drug related problems including ADR, drug interactions, drug therapy that needs optimization based on intra- individual variability (patient specific pharmacokinetic and pharmacodynamics data)
						19. able to assess significance of identified drug-related problems and prioritize DRP'S
						20. lab values are appropriately interpreted, including normal ranges
						21. integrates appropriate lab values into assessment of drug therapy
						22. critically evaluates drug therapy
						23. able to propose a rational, patient-specific therapeutic plan for problems
						24. Asks appropriate questions and follows-up to questions in an accurate and timely manner
						25. forms an opinion and makes specific recommendations
						26. able to alter recommendation appropriately based on new data
						27. overall understanding of drug therapy is appropriate and applied

						28. elicits a complete, accurate drug history from patient
						29. Demonstrates a knowledge of Evidence Based Medicine and Clinical guidelines for
						30. Utilizes a systematic Problem-Solving approach to patient care.

DRUG INFORMATION / ORAL-WRITTEN COMMUNICATION SKILLS

Check appropriate boxes (see scale below)

1	2	3	4	5	NA	
						31. communicates effectively with other health care professionals and patients
						32. effectively presents patient cases, therapeutic discussions to preceptor, peers
						33. consults and chart notes are clearly written and appropriate
						34. routinely and accurately documents therapeutic interventions
						35. maintains detailed pharmaceutical care notes and data
						36. keeps retrievable documentation of formal drug information requests
						37. critically evaluates sources using sound drug information theory and techniques
						38. understands and assists in the process of collecting Adverse Drug Reaction Reports and
						39. Identifies and thoroughly evaluates current literature and other sources of drug information and effectively apply this information to patient care

PRESENTATION:

Check appropriate boxes (see scale below)

1	2	3	4	5	NA	
						40. Overall presentation evaluation

GRADE: $\frac{\text{Total score ()}}{\text{Number of evaluated points ()}} \times 20 = \text{ \%}$

** Kindly note that the score of not applicable points should not be included in the calculation*

Minimum passing score: 60 %

Other Comments:

Specific strengths of Intern noted during the rotation:

•

Specific areas needing improvement on which future preceptors should focus during subsequent rotations:

•

PUNCTUALTY:

Poor	Below Average	Average	Good	Excellent	
					Attendance
					Punctuality

Preceptor's Signature: _____

Date: _____

Intern's Signature: _____

Date: _____

Appeals

Student wishing to appeal the outcome of an experiential rotation may do by completing the appeal form attached below duly named, signed and dated and send it to APPE committee secretary to be discussed in the APPE committee. Depending upon the circumstances, students may be allowed to continue to progress until the rotation appeal has been resolved. APPE committee will consider and make decision about the appeal within 30 days of notification of the appeal.

The APPE committee in accordance with the information it receives may:

- a. Uphold the appeal
- b. Deny the appeal
- c. Make recommendations concerning the appeal as are considered appropriate in the circumstances and are not inconsistent with the College Internship regulations.

The decision of APPE committee regarding the appeal shall be final.

Appeal Form

Section (1) About the Decision You Are Appealing Against

Title of the Appeal

Section (2) About You

Name	ID
Location	
Rotation	

Section (3) About Your Appeal

Grounds for appeal

In this section we need to know why you are appealing. Please write down in your own words the reasons why you disagree with decision.

If you do not complete this section this will delay dealing with your appeal and the appeal form may be returned to you.

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Section (4) Your Signature

You must write your name and sign your appeal form for it to be valid

Name	Signature
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Date	DD	MM	YY	YY	YY
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Code of Conduct

The Disciplinary Committee is the subcommittee of intern's committee which looks after the administrative and disciplinary issues raised during the conduction of internship year program. The committee deals with any administrative and disciplinary issues emerging during the program implementation.

Tasks and function of the Committee:

- Formulate and implement policies and procedures for the administration of internship year program.
- Monitor the student's punctuality and regularity, and professional behavior
- Monitor the achievement of training specific objectives as designed by the relevant academic department, in collaboration with the preceptor
- The disciplinary committee may take any disciplinary actions as per university regulations if an intern commits misbehavior in attitude or ethics thus disgracing the Pharmacists' code of conduct or Islamic regulations.

Investigation and Resolution Procedures

- Disciplinary committee will provide the accused student of notice of the allegation of misconduct within five university business days of receipt of the report alleging misconduct.
- The Disciplinary Committee will meet with the accused student as soon as possible after the notice of alleged misconduct has been sent but no later than ten university business days. In this meeting, the Discipline Committee will:
 - a. Inform the student of the nature of the allegations
 - b. Explain the hearing process; and
 - c. Explain the student's options.

Upon investigation of the incident, the student may be dismissed from the rotation and may receive an "F" in the course, and/or may be dismissed from the internship year program.

The student has the right to appeal this decision. The appeal must be submitted in writing to the Internship Committee. If the Committee under Internship Committee denies the appeal, the student has the right to appeal.

Note: If a student violates any of the rules, regulation and guidelines (set by university or training sites) in any rotation required for internship year, the incident must be reported to the Disciplinary Committee.