UC San Diego

SKAGGS SCHOOL OF PHARMACY AND PHARMACEUTICAL SCIENCES

APPE Pharmacy Student – Acute Care

Cardiology

GENERAL INTRODUCTION

UC San Diego's Sulpizio Cardiovascular Center was the first comprehensive heart hospital in San Diego providing heart and vascular programs in one central location. Our heart center optimizes both inpatient and outpatient cardiovascular care in a supportive environment attuned to the patient's needs and situation. When it opened in 2011, the center unified ambulatory, clinical, and inpatient heart and stroke care in one convenient location. The inpatient facility houses 54 beds, 4 smart operating rooms, 4 cardiac catheterization labs, an active emergency department, and an expanded imaging area.

The Sulpizio Cardiovascular Center is located at 9434 Medical Center Drive, La Jolla, CA 92037.

Rotation Preceptors:

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INTRODUCTION TO THE ROTATION

The Cardiology rotation at UCSD's Sulpizio Cardiovascular Center in La Jolla is considered an "**acute care**" learning experience and is six (6) weeks in length. The student will be an active member of the Cardiology (MCD) Team which often will carry an average census of 15-25 patients total (both ICU and floor patients). The student will be exposed to patients of all ages, both genders, and all races / ethnicities who mostly live in urban areas and are insured.

The student will have various responsibilities such as participation in multidisciplinary work and attending rounds, reviewing their patient's profile for appropriateness of drug therapy, assisting in the pharmacokinetic monitoring on all therapeutically monitored drugs (TDM), educating healthcare providers and patients prior to discharge, and meeting with their preceptor to discuss patients and various disease states. The student will have an opportunity to interact with other members of the pharmacy team as well discussing important patient care issues during team sign-out. Transitions of care activities (i.e. medication reconciliation, discharge counseling, etc…) for the Cardiology patients will be expected throughout this experience.

Disease states that are often encountered as admitting diagnoses would include chest pain (acute coronary syndromes (ACS), arrhythmias (atrial fibrillation / flutter, ventricular arrhythmias), heart failure, valvular heart disease (aortic stenosis, aortic regurgitation, mitral stenosis, mitral regurgitation), and planned cardiac interventions.

This is a concentrated learning experience where the student will gain a breadth of knowledge when it comes to taking care of patients with cardiac problems. The student will gain practical insight into the pharmacotherapy related to treating these conditions while under supervision from their pharmacist preceptor. This opportunity will allow their knowledge base to expand while being supported in a multidisciplinary and academically based environment.

GOALS, OBJECTIVES, LEARNING ACTIVITIES

Students will interact with a number of different healthcare providers and participate in a variety of patient care activities with the pharmacy preceptor and medical teams. The student will be provided with many opportunities to apply his/her academic basic science and clinical didactic course work to patient care in the hospital setting.

Goal	Objectives	Learning Activities
Goal 1: Provide patient centered care with an interprofessional team.	1. Demonstrate appropriate depth and breadth of pharmacotherapeutics and disease-related knowledge for a variety of common conditions seen in adult acute care patients.	a. Participate in and/or lead topic discussions. b. Apply the PPCP to every patient assigned by the preceptor, essentially independently, and present to the preceptor. c. For those medical problems and drugs which were not covered in the curriculum, the student is expected to efficiently locate appropriate literature resources and assimilate the information.
	2. Efficiently and appropriately optimize patient-specific outcomes for acute care patients using the Pharmacist Patient Care Process (PPCP).	a. Systematically collect information sufficient to identify drug related problems and to support decisions regarding drug therapy. b. Assess collected information to evaluate/identify drug related problems. c. Make decisions about a care plan for treatment; prevention; and wellness to optimize patient outcomes that includes, but not limited to, strategies that overcome patient-specific barriers to care. d. Implement a care plan in collaboration with health care team and patient that includes monitoring and continuity of care, and considerations for triage, patient referral, and follow-up. e. Monitor and evaluate care plan, make needed adjustments.
	3. Accurately prioritize multiple patient care responsibilities	a. Determine which patient's needs should be addressed first

	/needs in times of high activity and workload.	b. Address patient needs within an appropriate time, based on priority/acuity. c. Communicate clearly and appropriately regarding patient work that is unable to be completed during an assigned work shift (ie. hand-off).
	4. Apply pharmacokinetic dosing principles for a variety of commonly used drugs to determine the correct dose.	a. Accurately adjust doses according to patient's renal and/or hepatic function. b. Perform dose calculations for drugs that require monitoring for peak and trough concentrations. c. Participate in dosing protocols that pharmacists are responsible for in the practice site.
Goal 2: Utilize appropriate education and communication strategies for a diverse patient population.	1. Document patient care activities clearly and concisely to reflect the PPCP in the appropriate site-specific health record system(s).	a. Write SOAP notes for inclusion in the patient's medical record. b. Document pharmacist activities as part of a clinical intervention tracking system (where appropriate). c. Document treatment plans under protocol (eg. Vanocmycin, anticoag). d. Document medication reconciliation in EMR. e. Document patient education encounters.
	2. Educate healthcare team members on pharmacy topics relevant to their roles and practice.	a. Provide a formal education presentation, for example: • Patient case presentations • Medication information in-service presentations • Lead informal topic discussions / presentations with the interprofessional team
Goal 3: Collaborate effectively with an interprofessional healthcare team.	1. Actively contribute as a member of an interprofessional healthcare team.	a. Independently communicate medication therapy recommendations to members of the healthcare team. b. Share accountability for patient care decisions with the team. c. Demonstrate effective teamwork/collaboration skills. d. Participate in rounds with other health care professionals.
Goal 4: Utilize evidence-based medical information to advance the care of patients.	1. Apply evidence-based medicine practices to demonstrate knowledge of information	a. Retrieve, interpret, and apply biomedical literature applicable to the patients seen on this rotation.

	applicable to acute care medicine.	b. Respond to questions with the appropriate level of detail necessary to ensure proper patient care and communication with other relevant parties. c. Analyze a clinical study. d. Prepare and lead a Journal club.
Goal 5: Practice transitions of care activities.	1. Perform institutional procedures and apply best practices to ensure continuity of care for patients transitioning across healthcare settings.	a. Perform medication reconciliation as appropriate. b. Provide discharge counseling as appropriate. c. Participate in communications regarding transitions of patients between different levels of care in the same institution (ICU to ward). d. Communicate with community pharmacist and other community providers to facilitate successful transition to home upon discharge.
Goal 6: Practice professionalism.	1. Demonstrate ethical and professional behavior in all practice activities.	a. Adhere to patient privacy standards b. Demonstrate an attitude that is respectful of diverse individuals, groups, cultures, and communities.
Goal 7: Promote appropriate drug utilization.	1. Participate in institutional systems and programs to assure appropriate drug use.	a. Identify and report medication errors and adverse drug events. b. Participate in reporting pharmacist interventions or other activities in the electronic medical record. c. Become familiar with and adhere to specific institution medication use guidelines / policy statements / restrictions (e.g. renal adjustment guidelines, pharmacokinetic analyses, etc…). d. Utilize technology in pharmacy practice

EVALUATIONS

The student will complete three evaluations throughout this experience: 1) a midpoint Formative Self-Evaluation, 2) an end of the rotation Preceptor Evaluation and 3) an end of the rotation Site Evaluation. The preceptor, in addition to commenting/signing off on the student midpoint Formative Self-Evaluation, will complete a Summative Evaluation at the end of the rotation. Students may be evaluated at any other time at the discretion of the preceptor. Preceptors may evaluate students more frequently, so that the student is informed of areas requiring improvement early in the rotation. The primary preceptor should obtain feedback from all team members as well as any patient comments.

ORIENTATION TO THE ROTATION

On day 1, the preceptor will orient the student to the rotation. During this orientation, the rotation syllabus will be reviewed as well as the experiential goals and objectives.

This is a full-time clerkship experience. The student is expected to arrive at this site early enough to pre-round on the Cardiology patients prior to 8:30 AM rounds. This typically means arriving between 6:00-7:00 AM. Students typically stay until 17:00; long enough to complete their daily responsibilities and address any outstanding patient care issues.

If the student is sick and cannot make it to the rotation site, they will contact the UCSD CVC satellite pharmacy at (858) 657-6679 and report to the pharmacist-on-call that they will not be in for rotation duties. In addition, the student will e-mail the preceptor that they are sick and won't be in that day.

If the student needs to be absent from the rotation for legitimate professional reasons, a time off request will be discussed with the preceptor in advance of the requested day(s) off.

The student will dress professionally (ie. attire appropriate to a business setting) and wear their white coats and ID badges at all times while on site.

SUPPLEMENTARY MATERIALS AND ASSIGNMENTS

Active review of year 3 cardiovascular-related therapeutics topics (i.e. Ischemic Heart Disease, Arrhythmias, Heart Failure) is highly encouraged prior to the start of this rotation.

During the six-week rotation, the student will be required to give one (1) formal review of an article (i.e. Journal Club), one (1) Disease State review (~30 minutes in length), and one (1) formal Patient Presentation (~30 minutes in length). These requirements typically will be completed during week 2 (Journal Club), week 4 (Disease State review), and week 6 (Patient Presentation) of the rotation.

Throughout the rotation, the student learner will meet with the preceptor to discuss various topics. Potential topics include:

1. ECG interpretation
2. Percutaneous Coronary Intervention (PCI)
3. Stable angina
4. ACS medical management
5. Chronic HF
6. ADHF
7. Atrial fibrillation / atrial flutter
8. Antiarrhythmics
9. Vasopressors / inotropes
10. Devices (IABP, pVAD, LVAD)
11. Hemodynamics / swan numbers
12. Anticoagulants, anti-platelet agents
13. Pharmacokinetics of cardiovascular medications (lidocaine, digoxin, procainamide)
14. Valvular disease (aortic regurgitation, aortic stenosis, mitral regurgitation, mitral stenosis)
15. Surgical repair for cardiovascular problems (CABG, TAVR, etc.…)
16. ACC / AHA guidelines
    a. STEMI
    b. NSTE-ACS
    c. Atrial Fibrillation
    d. Valvular Heart Disease
    e. PCI
    f. Blood cholesterol
    g. Heart Failure

The following clinical trials are merely a handful of landmark cardiovascular trials that you may encounter during your elective experience.

ACS
ACUITY
ASSENT-2
CADILLAC
CAPRICORN
CAPRIE
CAST
CLARITY-TIMI 28
COURAGE
CURRENT-OASIS 7
CURE
EPHESUS
EPIC
EPILOG
EPISTENT
ESSENCE
EARLY-ACS
HEAT-PPCI
HORIZONS-AMI
ISAR-REACT 4
MIRACL
PLATO
PROVE IT-TIMI 22
TRANSFER
TRITON TIMI-38
WOEST

Heart Failure
A-HeFT
CARRESS-HF
CHARM-Added
CHARM-Preserved
COMET
DIG
DOSE
EMPHASIS-HF
GESICA
MADIT
MADIT-CRT
MERIT-HF
RALES
SCD-HeFT
SOLVD
V-HeFT

REFERENCES and RESOURCES

- CURRENT Diagnosis & Treatment in Cardiology (Crawford)
- Pharmacotherapy: A Pathophysiologic Approach (DiPiro, et.al.)
- Cardiovascular Physiology (Berne and Levy)
- SSPPS 212B Therapeutic Syllabus and Slides (Arrhythmias, Ischemic Heart Disease, Heart Failure)
- The Heart (Hurst, et.al.)
- Basic Clinical Pharmacokinetics (Winters)
- ICU Book: Intensive Care Unit (Marino)
- Cardiology Secrets (Adair and Havranek)
- www.theheart.org
- Primary literature