Anesthesia/Perioperative Medicine/OR Pharmacy

Description of Rotation:
The Anesthesia/Perioperative Medicine/OR Pharmacy rotation is a medication-intensive setting that exposes students to the operating room environment and the role of the pharmacist in this critical care area of the hospital. The OR is an area of the hospital with a wide range of medications administered in a very short period of time. The student will learn about the pharmacologic agents that are used in this area of practice, with emphasis on the medications used by anesthesiologists and surgeons during surgical procedures. They will become familiar with the key principles utilized in hospitals to provide pharmaceutical care in a perioperative setting.

Goals of Rotation:
Facilitate student learning and critical thinking skills in Anesthesia/Perioperative Medicine/OR Pharmacy in order to prepare the student to understand and apply comprehensive medication management skills in collaboration with the healthcare team.

1. Understand patient healthcare needs.
2. Apply evidence-based medicine.
3. Enhance and reinforce didactic coursework.
4. Develop interpersonal communication skills.
5. Adopt and formulate ethics and integrity for practice site and career.
6. Formulate an understanding of the laws and regulation for the practice site
7. Recognize barriers of care for patient
8. Demonstrate leadership skills for successful self-development in the provision of care for patients.

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

1. Develop a foundational clinical approach to patient care that can be applied in all practice settings.
2. Understand the role of a pharmacist on the Anesthesia/Perioperative Medicine/OR Pharmacy team.
3. Utilize patient-specific factors and evidence-based medicine to design a therapeutic regimen.
4. Review and assess each patient's pharmacologic regimen for appropriate indication, dose, route/method of administration, and duration of therapy.
5. Identify and resolve any therapeutic duplications, unintended drug interactions, or adverse events.
6. Design and implement evidence-based medication and disease-related monitoring that effectively measures the achievement of patient-specific pharmacotherapeutic goals.
7. Evaluate patient progress and response and adjust regimens appropriately.
8. Concisely present patient cases with clarity and accuracy.
9. Apply didactic knowledge to patient care situations, therapeutic decision-making and problem solving.
10. Demonstrate confidence in providing therapeutic recommendations to physicians, nurses and other health-care professionals.
11. Demonstrate ability to accurately and safely interpret medication-related orders including identification and resolution of problems.
12. Verbally communicate effectively and safely with healthcare professionals at appropriate levels.
13. Discuss issues of the perioperative setting and appropriate pharmacotherapy including (but not limited to):
   a. Surgical infection prophylaxis
   b. Sedation
   c. Neuromuscular blockade
   d. Inhaled anesthetics
   e. Local anesthetics
   f. Hemostatic agents
   g. Post-operative nausea and vomiting
   h. Perioperative pain control

Adapted from "ASHP Sample Surgery/Operating Room APPE Student Rotation". https://www.ashp.org/-/media/assets/inpatient-care-practitioner/docs/sicp-surgery-or-appe-student-rotation.ashx
14. Integrate clinical and pharmaceutical knowledge with patient specific information to identify potential medication related problems.
15. Integrate with members of the healthcare team and establish interdisciplinary relationships.

Activities:
1. OR Pharmacy operation
2. Patient safety
3. Pre-evaluation and management of surgical patients
4. Anesthetic Techniques including general and local anesthesia
5. OR satellite pharmacy distribution processes
6. Review pharmacy profiles and pertinent lab data in the perioperative setting
7. Evaluate drug therapy for perioperative patients
8. Pertinent perioperative patient monitoring parameters
9. Recognize and report Adverse Drug Reactions (ADRs)
10. Participate in SCIP initiatives and assist in ensuring and monitoring compliance with guidelines.
11. Participate in the all assigned pharmacy and interdisciplinary meetings relative to care of perioperative patients such as:
   a. SCIP Committee
   b. P & T Committee
   c. Patient Safety Committee
   d. Pharmacy Medication Management meeting
   e. Pharmacy Practice Meeting
12. Various other meetings as directed
13. Educational programs
   a. Patients
   b. Medical Staff
   c. Students
14. Presentations
   a. Pharmacists
   b. Residents
   c. Technicians
   d. IPPE/APPE students
   e. Nursing
15. Topic discussions
16. Journal clubs
17. Drug information

Common topics and disease states encountered in the Anesthesia/Perioperative Medicine/OR Pharmacy setting (list not inclusive):
1. Surgeries:
   a. General
      i. Colectomy/ostomy
      ii. Hernia repair
      iii. Nissen fundoplication surgery
      iv. Esophagectomy
   b. Vascular

Adapted from "ASHP Sample Surgery/Operating Room APPE Student Rotation". https://www.ashp.org/-/media/assets/inpatient-care-practitioner/docs/sicp-surgery-or-apple-student-rotation.ashx
i. Abdominal aortic aneurysm (AAA)
ii. Coronary artery bypass graft (CABG)
iii. Vascular bypass surgery
iv. LVAD lead placement
c. Orthopedic
   i. Total knee arthroplasty (TKA)
   ii. Total hip arthroplasty (THA)
d. Neurosurgery
   i. Spinal stenosis
   ii. Degenerative osteoarthritis of the spine
e. Urological
   i. Radical retropubic prostatectomy (RRP)/ radical perineal prostatectomy (RPP)
   ii. Urostomy/ Transurethral Resection of Bladder Tumor (TURBT)
   iii. Transurethral resection of the prostate (TURP)

2. Anesthesia:
   a. General anesthesia
   b. Regional Anesthesia
   c. Conscious sedation
   d. Malignant Hyperthermia
e. Neuromuscular blockade
   f. Sedation
g. Inhaled anesthetics
   h. Local anesthetics

3. Miscellaneous topics:
   a. Surgical infection prophylaxis (SCIP)
   b. Post-operative nausea and vomiting
   c. Perioperative and postoperative hypertension
   d. Post-operative pain management
   e. Hemostatic agents
   f. Postoperative ileus
   g. Fistula management
   h. Enteral feeding/management of tube feeding
   i. Fluids/Electrolytes/Nutrition
   j. DVT/SU prophylaxis
   k. Implantable pain pumps
   l. Chronic pain management
   m. Radiologic contrast agents

**Potential longitudinal activities to accomplish at site:**

1. Patient Care Activity [Patient Care Provider/Practice Manager Domain]
   a. Identify and collect appropriate drug-related monitoring parameters for each assigned patient utilizing (EBM)
   b. Maintain an adequate patient database for each assigned patient
c. Participate in intradispersiplanary rounds
d. Identify and prioritize drug-related problems for each assigned patient
e. Assess the appropriateness of each assigned patient’s drug therapy
f. Construct a detailed pharmacotherapeutic plan for each assigned patient
g. Present all patient data in a concise and meaningful fashion
h. Provide evidence-based regimens and monitoring plans for each patient
i. Obtain and write-up a patient medication history

Adapted from “ASHP Sample Surgery/Operating Room APPE Student Rotation”. https://www.ashp.org/-/media/assets/inpatient-care-practitioner/docs/sicp-surgery-or-appe-student-rotation.ashx
j. Provide a verbal therapeutic plan recommendation to another health-care professional (i.e. physician, RN, PA) (Interprofessional)
k. Verify Patient’s Allergies and intolerances
l. Identify and manage drug interaction for a specific patient
m. Establish and define goals for patients
n. Observe a Code in Health-Care Setting
o. Observe a Health Care professional perform a full physical examination and assess results
p. Administer a Vaccine or medication
q. Enter patient-specific information into an electronic health or pharmacy record system
r. Prepare commonly prescribed medications that require basic sterile compounding prior to patient use or basic non-sterile compounding prior to patient use

2. Physical Assessment Activity {Population Health Promoter Domain}
   a. Interpret diagnostic tests results for patient/caregiver/or preceptor
   b. Take a patient’s blood pressure
   c. Take a patient’s pulse
   d. Take a patient’s respiratory rate
   e. Assess a patient’s temperature
   f. Provide an optimal pain management or palliative care plan for a patient (Pain Scale)
   g. Assess an ECG (EKG)

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

4. Intervention Activities {Population Health Promoter Domain}
   a. Recommend empiric antibiotic therapy
   b. Adjust a drug dose in a patient with renal insufficiency
   c. Assess the significance of a drug-drug interaction

5. Education / Research activities
   a. {Interprofessional/ Team Member Domain}
      i. Explain to a patient, caregiver, or colleague each team member’s role and responsibilities
      ii. Contribute medication-related information to the team’s work
      iii. Present a patient case to a collect during a handoff or transition of care
   b. {Informational Master Domain}
      i. Prepare a written pharmacokinetic consultation
      ii. Prepare a handout for case presentation
      iii. Prepare an article for a newsletter or publication
      iv. Prepare a written drug information response in a practice setting
      v. Provide options for medication shortage
      vi. Provide a formal case presentation
      vii. Provide an educational presentation to pharmacists
      viii. Provide an educational presentation to other health care professionals
      ix. Lead a Journal Club discussion
      x. Participate in a Drug Utilization Project
      xi. Participate in a Patient/Medication Safety Review or error reduction program
      xii. Attend and or develop a monograph for the P+T Committee
      xiii. Discuss the role of a pharmacists as a manager and supervisor
      xiv. Assist or discuss in the preparation for regulatory visits and inspections
xv. Participate in a discussion of toxic exposure, poison control centers and the pharmacy's role in emergency preparedness

xvi. Participate in a discussion of a pharmacist's role in ethical issues related to any of the following topics: end of life care, professional behavior, clinical research, and pharmacy current event/hot button issue

xvii. Discuss the benefits of new technology and innovations to pharmacy (Epic, Pyxis, Robotics)

xviii. Discuss the process of formulary drugs and how to authorize the use of non-formulary medication when clinically appropriate

c. Continued Professional Development (Self-Developer Domain)

i. Continue Professional Development: Provide or Attend a Continuing Education Program