

IPPE II Institutional PHRM 470 Workbook Spring 2020

Course Coordinator

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The purpose of this workbook is to serve as a guide for you while you are on your rotation. The exercises are specifically tailored to expose and orient you to the practice of pharmacy in an institutional / hospital setting. To gain the most benefit of these exercises, please think about the questions and try to answer them on your own. If you cannot find the answer then discuss with your preceptor for direction on where to find the answer. This is your rotation, not your preceptor's.

Review IPPE II Institutional PHRM 470 course syllabus to better understand how it is correlated with the activities of this workbook.

Pre-IPPE II Rotation Reflections:

Note: Due before first day of Focus Rotation

Maximum of 3 – 4 sentence responses ... be specific yet brief.

Share Pre-Rotation reflections with your Preceptor

1. What are your goals for this rotation?

2. How do these goals fit in with your career goals?

3. What are you most excited about in regards to this rotation?

4. What do you think will be the most challenging part of this experience?

Section A

Operational experiences targeted for your 2 week rotation

Prior to Starting Focus IPPE II Institutional

Ensure you have contacted your preceptor via e-mail (preferred) or phone at least two weeks prior to the first day of rotation. Be sure to ask what documentation you should bring with you on the first day, dress code, where to park, and when and where to report. You should also ensure that there are no readings or other assignments they want you to have completed prior to your arrival. Remember that this is your first interaction with your preceptor, so professionalism is essential.

Orientation - First meeting

The first meeting with your preceptor is the time where expectations and goals are discussed and the plan to achieve them is prepared. Use open, direct communication realizing that it is your responsibility to complete exercises and activities to develop skills and knowledge targeted for this experiential rotation. Your preceptor's role is to facilitate and meet to discuss how you are progressing.

Preceptors are not responsible for filling every minute of your rotational time with activities. There may be days that you complete all your required elements before the end of your hours. You should then ask if there are other tasks you can help with or roles you can observe. If approved with your preceptor, help out with day to day tasks in the pharmacy, such as first fill, medication delivery, filling remote medication dispensing machines, and packaging. If you find that you are having trouble filling your time at a site, contact Dr. Trovinger.

Part 1

(To be completed during your two week focused rotation)

Patient Care Roles

Institutional settings house a wide variety of health care professionals that are directly involved in the medication dispensing process (ordering to administration). In the table below, briefly describe the role each team member plays.

Team Member	Role and Responsibility
Prescriber (Physician, PA, NP)	
Pharmacist	
Pharmacy Technician	
Nurse	
Respiratory Therapist (If applicable)	

Medication Flow Process

In the table below, outline the process from the entering of the medication order by the prescriber to the administration to the patient. Try to identify as many steps in the process as possible. Be sure to include steps for both medications that must be manipulated in the IV room, medications that require pharmacist monitoring, and preprepared medications (oral solids, premixed IVs, etc).

Preprepared Medications (oral solids, premixed IVs, etc)	Medications that must be manipulated in the IV room	Orders that require Pharmacist intervention
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Systems and Technology

Many different types of technology are used in institutional pharmacy, either to increase patient safety, increase pharmacy personnel safety, and/or increase pharmacy productivity. In the table below outline types of technology used at your facility. Feel free to add more lines as needed.

Name of Technology	What it does	How it benefits patients and/or pharmacy personnel	What is the procedure if the piece of technology doesn't work (power outage, downtime, etc.)

Patient Safety

1. What is the difference between a medication error (or variance) and an adverse drug event? Give an example of each type.

2. Outline the process for reporting/response if a patient experiences an adverse drug event.

3. Outline the process reporting/response when a medication error occurs.

4. What type of medications errors or adverse drug events require reporting to national agencies and how do you do this?

5. What are some safety measures in place to prevent medication errors? How do these measures improve patient safety?

Safety Measure	How it Improves Patient Safety

6. What are National Patient Safety Goals? Why are they important? Give at least two examples of current goals. How is your institution addressing these goals?

Sterile Compounding

1. What is Aseptic Technique and how does it relate to sterile compounding in the pharmacy?

2. What is the difference between a horizontal and a vertical flow hood? Give an instance where you would use each one.

3. What is USP 797?

4. What qualities does a compounding area have to maintain to be a clean room as defined by USP 797?

Drug Information Resources

Institutional pharmacy requires the use of a variety of different drug information resources. For the following situations, list the reference(s) you would utilize to provide a response.

Situation	Resource Utilized
Promethazine 25mg in 50ml NS is utilized frequently at your facility. The administration group would like to explore the possibility of batching this medication once weekly for patient use. They ask you what the expiration dating is for this compound.	
A nurse calls regarding compatibility of intravenous medications. His patient only has two lines and needs to receive the following medications: Norepinephrine, Meropenem, and Vasopressin. He wants to know what he can run together in the same line.	
A nurse calls with a question regarding allergies. Her patient is allergic to penicillin and the physician ordered Zosyn. She wants to know if a patient with a penicillin allergy can receive Zosyn.	
A physician has a neonatal patient with possible meningitis that they would like to give ampicillin. The physician would like to know what the dose for this patient would be.	

A patient arrives in the emergency department with a possible overdose of sertraline. The ED doctor needs to know if there is a reversal agent for this medication.	
A nurse calls stating she has a patient getting amiodarone. The line appears to have moved and the patient is now showing signs of extravasation. She wants to know what she should do.	
You are entering an order for a nafcillin sodium drip and need to know how much and what kind of fluid this medication should be diluted in.	

Medication Inventory

Medication inventory and the techniques used to monitor and control it can vary vastly between institutions. Answer the following questions regarding the process at your institution.

1. How are medications arranged on the shelves? Are there different sections for different types of medications (injectables vs. oral solids)?

2. How often do orders arrive at the pharmacy?

3. How do you determine what to order and in what quantity?

4. What do you do if a medication is needed before your next order and you don't have it?

5. Do controlled substances follow the same procedures as other medications? (How is it different?)

6. What does the institution do with expired or recalled medications?

Pharmacy Personnel Interview

Getting feedback from people who work daily in this field will allow you to better assess if this is a career path that appeals to you. Using the next two forms, complete at least two interviews while at your practice site, one with a pharmacist and one with a technician.

Pharmacy Personnel Interview Form Pharmacist

Primary role and responsibilities:

Favorite Activity:

Least Favorite Activity:

Normal Work Schedule:

- Mon – Fri with No Weekends
- Day Shift with Q ___ Weekend Q ___ Holiday.
- Rotating Schedule with ___ Evening or Night Shifts / Month
- Hours/day Hours / Week

Salaried: Yes / No

Hourly: Yes / No

Overtime Pay: Yes / No

Biggest Satisfaction:

Biggest Challenge:

Pharmacy Personnel Interview Form Pharmacy Technician

Primary role and responsibilities:

Favorite Activity:

Least Favorite Activity:

Normal Work Schedule:

- Mon – Fri with No Weekends
- Day Shift with Q ___ Weekend Q ___ Holiday.
- Rotating Schedule with ___ Evening or Night Shifts / Month
- Hours/day ___ Hours / Week

Salaried: Yes / No

Hourly: Yes / No

Overtime Pay: Yes / No

Biggest Satisfaction:

Biggest Challenge:

Section B

IPPE II Class

Introduction

The class throughout spring semester (Section B of this workbook), is designed to strengthen these basic operational activities as well as provide exposure to more inter-disciplinary patient focused services. Students, will have course assignments that must be submitted into Canvas by targeted times.

Class Weekly throughout Spring Semester

Presentations

Each team will present once during the semester on an assigned patient case. Please see the course schedule for each team's patient case.

Guidelines for presentations:

1. Each presentation must feature all team members actively participating
2. Team presentations should be within a 20 to 25 minute time range
3. A 5 to 10 minute question time will follow to emphasize targeted key concepts
4. **The presenting team must submit (in Canvas) Power point slides prior to their Friday presentation**
5. The following should be included in the presentation:
 - A title slide with topic name and presenters
 - Pertinent patient demographic information
 - Problem list
 - The following for the top problem
 - Subjective evidence
 - Objective evidence
 - Current medications
 - Goals of therapy
 - Evaluation of treatment options
 - Recommended treatment plan
 - Drugs to be avoided
 - Monitoring parameters with frequencies
 - Summary for change (Max of 60 seconds to describe patient and what to change)
6. Students will present in professional dress.
7. A 1 page front and back handout for the presentation must be created and cannot just be a print out of the slides.
8. A paper copy of the handout must be provided for each student in the class as well as the instructor. Dr. Trovinger will print out the handout if e mailed to her prior to 3 PM on the day before your presentation. If not e mailed to Dr. Trovinger by this time, you will be expected to print a copy of the handout for each person.
9. More than 2 fails on the rubric will require the person to redo the presentation.

Classroom Team Assignments

Week	Date	Presenting Team
1	1/17	
2	1/24	1
3	1/31	2
4	2/7	3
5	2/14	4
6	2/21	5
7	2/28	6
8	3/6	7
9	3/13	8
10	3/27	9
11	4/3	10
12	4/17	11
13	4/24	12
14	5/1	13
15	5/8	Class Cancelled

Class participation

Attendance at each class session is mandatory.

Worksheets

The below worksheets are representative of calculations that are encountered in the institutional pharmacy setting. Worksheets are not turned in for credit, they are merely to guide student studying for the weekly quiz.

Weekly Quizzes

The first 5 minutes of every class will involve the completion of a calculations quiz. The quiz will contain only one question directly from the optional worksheet for the week. Students who arrive after the quiz has started will not be allowed to take the quiz. The two lowest quiz scores will be dropped.

Week 2:

Elizabeth is to receive 250mg of acetaminophen. The concentration of liquid oral acetaminophen available in your pharmacy is 160mg/5mL. What dose should be administered to Elizabeth expressed in mLs.

The physician would like for Elizabeth to receive her acetaminophen via IV instead of PO. How many mLs should she receive per dose?

Week 3:

The physician would like to start your patient on a morphine/bupivacaine epidural with the following recipe: 10mg Morphine, 0.125% Bupivacaine in 0.9% NS qs to 100mL. You have the following ingredients: Morphine 10mg/10mL PF, 0.5% Bupivacaine PF, and 0.9% NS 100mL bags. How much of each ingredient would you use?

The physician would like the patient to receive 0.5 mg of morphine every hour. What rate should the nurse program into the pump?

Week 4:

Sherlock is a 59 year old male. Sherlock's physician wants to start him on weight based Lovenox dosing. The dose is 1mg/kg q12h and Sherlock weighs 193 lb and he is 5' 9". How many mg should Sherlock receive with each dose?

A few days later, Sherlock's Cr increased to 2.5 mg/dL. You need to calculate Sherlock's CrCl to determine if it is still safe for him to receive Lovenox. What is his CrCl?

Week 5:

The physician taking care of Mickey decides to change his Rocephin dose to 850mg IV daily. The physician wants to ensure Mickey is taking in the minimum amount of fluid possible, so you should give it the max concentration of 100mg/mL. How much fluid should the TOTAL daily dose be?

Mickey is also going to be treated with clindamycin 10mg/kg IV every 8 hours. Mickey's mom says he weighs 23 lbs. The clindamycin you have available is 150mg/mL. The maximum concentration of clindamycin for IV injection is 18 mg/mL. You want to round up to the nearest whole mL for your final product. There is 0.9% NS available for dilution. What is your dose, what is your total volume for IV injection, and how much of each product would you use?

Week 6:

You receive a transfer patient from another facility with a heparin drip currently running. Their drip is currently running at 18 mL/hr and has a concentration of 50 unit/mL. You need to change the patient to your bag of heparin, with a concentration on 100 unit/mL. What is the new rate you will need to run this bag at to achieve the same rate of infusion for the heparin?

You are initiating heparin on a new patient. According to your hospital's policy, you should draw an aPTT 8 hours after starting the drip. The nurse starts the drip at 1800. When would you instruct the nurse to draw the aPTT?

Week 7:

Jennifer is a hospice patient who has been receiving 12 mg/day of IV hydromorphone. She is getting ready to be discharged and the doctor wants her pain medication to be converted to oral morphine ER to be given every 12 hours. The doctor also wants you to decrease the dose by 25% to account for cross tolerance. What would be her Morphine ER dose?

The doctor also wants Jennifer to receive a breakthrough pain medication of IR morphine to be given every 4 hours. The dose of the breakthrough morphine would be 10% of the daily dose every 4 hours as needed. What would the breakthrough dose be in mg?

Week 8:

You are part of the response team to a cardiac arrest called in your hospital for Robin. After initial measures, ROSC occurs and the physician would like to start Robin on norepinephrine 0.2 mcg/kg/min. Robin weighs 162 lbs and the prediluted bag of norepinephrine in your box is 8 mg / 250 mL. What rate should you tell the nurse to start the drip at in mL/hr?

How long will your current bag last at the rate above?

Week 9:

Katniss is a 170 lb female who comes to the emergency room complaining of chest pain. Her EKG shows ST segment elevation. The doctor wants to start her on Integrillin. You have the 0.75 mg/mL and 2 mg/mL concentration Integrillin in your pharmacy. The doctor wants 180 mcg/kg bolus followed by a 2mcg/kg/min drip. What is the dose of the bolus using the 2 mg/mL vial? What is the rate in mL/hr of the drip using the 0.75 mg/mL vial?

The physician also wants to start Katniss on unfractionated heparin with a bolus dose of 70 units/kg. You have a 5000 unit/mL vial. How many mLs should you instruct the nurse to give for her bolus?

Week 10:

The physician would like to start Natasha on a D10 1/4NS with heparin 1 unit/mL and calcium gluconate 100 mg/100mL drip. Your technician would like to make this with a base solution of D10W 500ml. You have the following concentrations of electrolytes: Sodium chloride 2.5 meq/mL; Heparin 100 unit/mL; Calcium gluconate 1000mg/10mL. How much of each additive would you need (express your answer in mLs)?

The physician would like the drip to run at 125mL/hr. How many bags would you need to last 24 hours?

Week 11:

Ronald currently receives dialysis three times a week and the doctor wants to start him on Procrit three times weekly after dialysis. Ronald weighs 215 lbs. You look up and see the starting dose of Procrit is 150 units/kg subq 3 times weekly. What would Ronald's dose be for each injection (round to the nearest 1000 units)?

After 2 weeks of treatment Ronald's hemoglobin has increased by 1.1 g/dL which means his dose must be decreased by 25% What is his new dose (round to the nearest 1000 units)?

Week 12:

Mike's physician determines that his Humalog should be given via a carb count scale. He should get 1 unit of insulin for every 10 grams of carbohydrates. Mike has the following meal for dinner: Baked chicken: 4 oz, 0 carb grams; Mashed potatoes: 4 oz, 25 carb grams; Caesar salad with dressing: 3 oz, 5 carb grams; Mixed vegetables: 3 oz, 8 carb grams; A medium-sized roll: 2 oz, 22 carb grams. How many units of Humalog insulin should Mike receive with his meal?

Mike is started on Bactrim suspension 75 mg/kg/day sulfamethoxazole component PO in 3 divided doses. Mike currently weighs 150 lbs. How many mLs of suspension should Mike get in each dose?

Week 13:

The physician has asked you to calculate a CrCl for Daisy. She is 95 years old, 5' tall and weighs 105 lbs. Her Cr today is 1 mg/dL. What is her current clearance?

The doctor decides to start Daisy on Rocephin 1 gram twice daily. 1 gram of Rocephin is mixed in 50 mL of saline. What is the concentration of the Rocephin in the saline (in mg/mL)?

Week 14:

It is determined that Amy has a GI bleed and will need a protonix drip. The physician would like Amy to receive 8mg of protonix every hour. The standard concentration of this drip in your pharmacy is 80mg / 100mL. What rate should Amy's drip be started at in mL/hr?

Due to the GI bleed, the physician would also like to stop Amy's NG tube diltiazem and start her on a diltiazem drip. Amy took Cardizem CD 360mg daily at home. The prediluted bags available in your pharmacy are 125mg of diltiazem / 125 mL. What rate should her drip be started at?

Week 15:

The fentanyl available at your facility is 100 mcg/2 mL. How many mLs of fentanyl would Tony need if his dose was 15 mcg?

How many 15 mcg doses could you make from the 2 mL bottle?