

Critical Care Pharmacokinetic Residency Program

Tehran University Medical Sciences

Faculty of Pharmacy

Sina Hospital

I. The Critical Care Pharmacokinetic Residency Program is designed to allow the Residents to improve skills in the provision of clinical pharmacotherapy services in critically ill patients including identification of therapeutic needs of the patient, reviewing medication profiles, monitoring for efficacy and toxicity, and providing medication recommendations and interventions in collaboration with the medical team.

II. Program Directors:

Dr. Mohammad Sharifzadeh. Dean of the Faculty of Pharmacy

Dr. Hamid Akbari. Associate Dean of International Affairs

Dr. Mojtaba Mojtahedzadeh. Coordinator of Residency / Fellowship

Dr. Mohammad Reza Rouini. Coordinator of Residency / Fellowship

III. General Areas of Emphasis:

1. General issues in ICU management and prophylaxis:

a. Deep Vein Thrombosis/Pulmonary Embolism

b. Gastrointestinal

2. Sedation, Analgesia, and Neuromuscular Blockade

3. Infectious Diseases:

a. Ventilator Associated Pneumonia/Nosocomial Pneumonia

b. Aspiration Pneumonia

c. Intraabdominal Infections

d. Endocarditis

e. Meningitis

f. Catheter Related Infections

g. Urinary Tract Infections

4. Sepsis Management

5. Vasoactive/Inotropic Therapy

6. Fluid/Electrolyte Management

7. Therapeutic Anticoagulation Management

8. Anemia in Critically Ill Patients

9. Basic Principles of Enteral/Parenteral Nutrition

10. Acid/Base Abnormalities

11. Pharmacokinetic dosing/monitoring

12. Pharmacotherapy in Renal/Hepatic Insufficiency/Failure

13. Blood Glucose Management in Critically Ill patients

14. ACLS

IV. Activities:

Review and identify therapeutic treatment goals and necessities in ICU patients.

Develop pharmacotherapeutic plans for treatment of acute and chronic medical problems in the ICU setting.

Monitoring progression of therapy through assessment of symptoms, laboratory values, and other relevant clinical data.

Anticipate, prevent, and/or manage drug interactions and adverse drug reactions.

Provide pharmacokinetic dosing and monitoring when appropriate.

Adjust medication doses in the face of renal/hepatic insufficiency.

Write progress notes and consultations for drug therapy selection, pharmacokinetic monitoring, and other pharmacotherapeutic interventions/recommendations.

Collaborate directly with the healthcare team (physicians, pharmacists, nurses, respiratory therapists, etc.) and seek therapeutic interventions when warranted.

Serve as a drug information resource for physicians, nurses, and ancillary staff.

Candidates will provide direct pharmaceutical care to a variety of patients on a daily basis.

Initially, candidates will shadow the preceptor as she/he rounds in the intensive care units/patient care areas. Candidates will maintain and monitor a complete patient medication profile for every assigned patient. Candidates are expected to have all patient profiles reviewed and updated prior to clinical meetings.

Candidates will also perform additional clinical/pharmacokinetic/drug information activities as assigned by the preceptors and document interventions. Candidates who do not meet clinical documentation expectations may receive a letter grade reduction for the rotation.

Candidates who choose to not document interventions appropriately will receive a failing grade for the rotation.

Participate in discussions on topics pertinent to critical care medicine: 3 required (Basics, Nutrition guidelines, Sepsis guidelines) and 1 extra from list below or another topic at the discretion of the preceptor

Prepare a formal presentation regarding a topic in management of critically ill patients or patient case to be presented to preceptor and other faculty during the final week of the rotation.

Prepare one journal club from an article pertaining to critical care medicine and present to preceptor. Article must be selected 1 week in advance of presentation and provided to preceptor.

Attend and participate in assigned medical staff and clinical pharmacy meetings as directed, by the preceptor. Potential opportunities include: Pharmacy and Therapeutics, Pharmacy/Nursing, and preceptor-led lectures.

Candidates may be required to participate in formulary reviews, and may be required to prepare drug monographs and present to Pharmacy and Therapeutics committees for approval.

V. Attendance

Candidates must report to Sina Hospital by 08:00 A.M. each morning 6 days a week .

VI. Grading Criteria

1. Residents will be evaluated subjectively and objectively. Students will be graded by all preceptors having educational contact with the student. Grading will be based upon the following:

2. Clinical Performance (35%) + Attitude/Professionalism (5%) = 40%

- a. interaction skills
- b. clinical knowledge
- c. literature utilization
- d. patient monitoring
- e. clinical interventions
- f. communication skills
- g. interpretation of orders
- h. profile review
- i. communication with other health professionals
- j. professional attire/appearance
- k. quality control procedures
- l. storage procedures
- m. technical skills in preparing sterile products

3. Oral/Written Activities: Meetings + Assignments + Homework = 20%

- a. quality of presentations
- b. discussion participation

- c. preparation
- d. subject comprehension
- e. professional technique
- f. enthusiasm
- g. ADE / Med Variance reporting (3 of each)
- h. new drug monographs
- i. medical updates
- j. nursing and pharmacy staff information updates
- k. drug information assignments

4. **Final Presentation = 20%**

5. **Journal Club = 10%**

6. **Attendance:** Two **unexcused** absences will result in a drop of one letter grade

Grading Scale: Points Grade

90-100 A

80-89 B

70-79 C

≤ 69 E

- a. meeting with faculty and residents
- b. special projects
- c. clinical documentation of interventions
- d. preparation and distribution of sterile products

VII. Critical Care Medicine Topics (Choose 1):

1. Pulmonary Disorders/Considerations
 - a. Ventilator Support
 - b. Acute Respiratory Failure
 - c. Acute Respiratory Distress Syndrome
2. Acid/Base Abnormalities
3. Electrolyte/Fluid Abnormalities
4. Gastrointestinal Disorders/Considerations
5. Hepatic/Renal Disorders
 - a. Acute Renal Failure
 - b. Continuous Renal Replacement Therapies
 - c. Acute Liver Failure
6. Seizure Disorders / Status Epilepticus
7. ETOH Withdrawal
8. Glucose Control / DKA
9. Nutrition Support
10. Analgesia/Sedation/Neuromuscular Blockade
11. Anemia
12. Toxicology
13. Coagulation Disorders
 - a. HIT/DIC
 - b. Pulmonary Embolism/DVT
14. Infectious Diseases
 - a. Ventilator Associated Pneumonia/Nosocomial Pneumonia
 - b. Aspiration Pneumonia
 - c. Sepsis (Xigris)
 - d. Intraabdominal Infections

e. Endocarditis

f. Meningitis

g. Catheter Related Infections

h. Urinary Tract Infections

VIII. Please note that any Resident who is dismissed from their rotation for unprofessional conduct or clinical incompetence will automatically receive a failing grade.

Qualifications of the Applicant:

Selected applicants will be required for an on-site interview. The applicant must meet the following requirements :

1. Pharm. D or M. Pharm Degree From an Accredited College of Pharmacy
2. Knowledge of physiology , pharmacokinetic pharmacology and therapeutics.
3. The candidate must meet all the general admission requirements for TUMS international Pardis regarding graduate school admission criterias, including English Proficiency Exams.