



Fellowship in Medical Toxicology



INTRODUCTION:

Internationally toxicology is a sub-speciality of emergency medicine with separate certification. In the western part of the world poisoning is mainly due to tablet overdose and industrial accidents. India being a developing country the incidence of poisoning , envenomation and chemical exposure is increasing. Apart from this an increased incidence of plant and chemical poisoning is unique to India, for which there is very little published research and inadequate guidelines for the management of these poisonings. A significant proportion of patients seeking emergency medical care in India come due to the manifestations of chemical and plant toxicity. Moreover the awareness of the need for Medical toxicologists is virtually non existent in India and hence, Medical toxicology as a separate specialty is long overdue.

Medical toxicology encompasses the pathophysiology, diagnosis, and treatment of clinical problems related to poisoning and drug intoxication. Medical toxicologists treat patients with acute drug overdoses, as well as those poisoned by industrial chemicals, snakes, plants, herbs and alternative medical products.

Medical toxicologists are emergency physicians, Intensivists, pediatricians, general physicians, Clinical Pharmacologists and Forensic experts put together and no single speciality can fulfill this need intoto. Hence it is necessary to initiate Medical toxicology as a separate speciality with input from the various specialities. They direct poison control centers and advice Government agencies.

The training program includes direct patient care, consultation to poison centers and evaluation of cases at the centers, rotations in critical care, Emergency medicine, preventive medicine; and course work in clinical pharmacology, pharmacokinetics, and the medical management of exposure to hazardous chemicals, plants and envenomation.

(1) GOALS

The goal of the training program is to produce a Fellow in Medical Toxicology with the necessary knowledge, skill and attitude to diagnose and manage a wide range of clinical problems in Toxicology.

The qualities to be absolutely necessary:

- 2.1** Sound knowledge and skills in the management of various poisonings, drug overdose chemical exposures and envenomations
- 2.2** Competent in life saving emergency interventions and appropriate use various diagnostic tests, and interpret their results intelligently & promptly.

- 2.3** Be familiar with the fundamentals of research methodology.
- 2.4** Possess humanistic qualities, attitudes and behaviour necessary for the development of appropriate patient-doctor relationship.
- 2.5** To assist and if necessary train juniors.
- 2.6** To keep up-to-date and be familiar with all recent advances in the field of toxicology.

(2) OBJECTIVES

3.1 KNOWLEDGE & SKILLS

As a result of the training under this program, at the end of 1 year of postgraduate training, a resident must acquire the following knowledge, skills and competencies:

3.1.1 A thorough knowledge of pathological abnormalities, clinical manifestations, and principles of management of toxicological emergencies in children and adults.

3.1.2 Skill and competence to choose and interpret correctly the results of the various routine investigations necessary for proper management of the patient. While ordering these investigations, a resident must be able to understand the sensitivity, specificity and the predictive value of the proposed investigation, as well as its cost-effectiveness in the management of the patient.

- 3.1.3 Skill and competence in emergency interventions like endotracheal intubation, needle cricothyrotomy, defibrillation, mechanical ventilation, hemodialysis, ultrasonography, Echo etc.
- 3.1.4 Skill and competence in handling the appropriate antidotes
- 3.1.4 Skills and competence to perform commonly used diagnostic procedures, namely, blood and body fluids collections,
- 3.1.5 Skill and competence to choose and interpret correctly the results of specialized investigations including radiologic, ultrasonographic, biochemical, hemodynamic, electro-cardio graphic, electrophysiological, pulmonary functional, hematological, immunological, nuclear isotope scanning and arterial blood gas analysis results.
- 3.1.6 Skill and competence to provide consultation to other medical and surgical specialties and sub-specialties, whenever needed.
- 3.1.7 Skill and competence to function effectively in varied clinical settings, namely emergency/critical care, ambulatory care, out-patient clinic, in-patient wards.

- 3.1.8 Skill and competence to take sound decisions regarding hospitalization, or timely involvement of other consultants of various medical sub specialties recognizing his limitations in knowledge and skills in these areas.
- 3.1.9 Proficiency in selecting correct drug combinations for different clinical problems with thorough knowledge of their pharmacological effects, side-effects, interactions with the other drugs, alteration of their metabolism in different clinical situations, including that in the elderly.
- 3.1.10 Skill and competence to advise on the preventive, restorative and rehabilitative aspects including those in the elderly, so as to be able to counsel the patient correctly after recovery from an acute or chronic illness.
- 3.1.11 Skill and competence to undertake a critical appraisal of the literature published in various journals and be able to apply the same in the setting in which the resident is working.
- 3.1.12 Skill and competence to work cohesively in Resuscitation teams along with paramedical personnel, maintain discipline and healthy interaction with colleagues.

3.1.13 Skill and competence to communicate clearly and consciously, and teach other junior residents, medical students, nurses and other paramedical staff, the theory as well as the practical clinical skills required for the practice of Medical Toxicology.

3.2 INTEGRATION

The entire educational program will be conducted in an integrated and co-ordinated manner in association with various para-clinical and clinical departments . The senior staff members of these departments will be requested to give lectures on various topics in relation to toxicology,

Eligibility Requirements:

MBBS or diploma / PG degree in anaesthesia, paediatrics, Respiratory medicine and General medicine.

Syllabus

1. Principles of Toxicology

- Pharmacokinetics /Toxicokinetics – metabolism, absorption
- Biokinetics – elimination/Clearance models
- Pharmacodynamics/Toxicodynamics – dose relationship to effect, agonism/antagonism
- Pharmacogenomics/Toxicogenomics – Xenobiotic response, gene profiling
- Mutagenesis, carcinogenesis,teratogenesis
- Disaster Management

2. Airway

- Airway Management

3. Cardiac Emergencies related to toxicology

- Cardiogenic Shock
- Congestive Cardiac Failure
- Syncope
- Cardiac Pacing
- Cardiac Arrhythmias

4. Shock

- Septic Shock
- Management of Shock and IV Fluid Therapy

5. Neurological Emergencies

- Altered Mental Status and Coma

6. Respiratory Emergencies

- Acute Respiratory Failure
- DVT and Pulmonary Disease
- Hemoptysis
- Noncardiogenic Pulmonary Edema
- Pleural Effusions
- Pneumothorax
- Pulmonary Embolism

7. Surgical Emergencies

- Pancreatitis
- GI Foreign Bodies
- Rectal Foreign Bodies

8. Paediatric toxicology

- Approach to the poisoned Pediatric Patient
- Pain
- Ingested Foreign Bodies
- Bacteraemia and Sepsis
- Seizures
- Status Epilepticus

9. Wound Assessment and Management

- Principles of Wound Management
- Methods of Wound Closure

10. Local Anesthetics and Anesthesia

- Bupivacaine
- Lidocaine Hydrochloride
- Nerve Blocks

11. Analgesia and sedation

12. Imaging

- Emergency and Critical care Sonography, x-ray, CT scan and MRI.

13. Toxicology

- Approach to the Poisoned Patient
- Antidotes Commonly used in Overdoses
- Treatment of Hypotension Associated with Drug Poisoning
- Carbon Monoxide Poisoning
- Illicit Drugs and Controlled Substances of Abuse
- Alcohol Withdrawal
- Digitalis Toxicity
- Calcium Channel Blocker Toxicity
- Acetaminophen Hepatotoxicity
- Salicylate Overdose
- Tricyclic Antidepressant Overdose
- Monoamine Oxidase Inhibitor Overdose
- Arsenic Poisoning
- Cyanide Poisoning
- Iron Poisoning
- Lithium Carbonate Overdose
- Serum Osmolality
- Ethanol Poisoning
- Ethylene Glycol Poisoning
- Organophosphate and Organocarbamate Poisoning

14. Endocrine Emergencies

- Hypoglycaemia
- Diabetic Ketoacidosis
- Lactic Acidosis

15. Acid Base and Electrolytes

- Acid Base Balance and Interpretation of Blood Gas Results
- Electrolyte Disorders

16. Burns

- Chemical Burns
- Inhalation-Smoke

17. Emergency Department Anaphylaxis

- Anaphylactic Reactions

18. Emergency Department Bites & Stings

- Bee Stings
- Animal Bites
- Human Bites
- Insect Bite

19. Envenomations

- Envenomations- Cobra
- Envenomations- Scorpion
- Snake Bite Emergency First Aid Information

20. Environmental/ Industrial Emergencies

- Toxins and Toxicants used in Industry
- Industrial disaster management
- Field triage

21. Mechanical Ventilation

- Introduction
- Specific Modes of Ventilation
- General Classes of Ventilators
- Noninvasive Ventilation

- Weaning
- Advanced Cardiac Life Support

22. Urogenital Emergencies in the poisoned patient

- Acute Renal Failure
- Urinary Retention

23. Transfusion Emergencies

- Transfusion Medicine

24. Hepato- Biliary Emergencies related to toxicology

- Fulminant Hepatic Failure
- Hepatic Encephalopathy
- Acute Pancreatitis

25. Psychiatric Emergency and counselling

- Psychosis
- Depression and Suicide

26. Legal Aspect of Medical Toxicology

Assessment

- Paper I Theory (100 marks) -Minimum 50% Pass
- Paper II Theory (100 marks)- Minimum 50% Pass
- Clinical examination and Viva (150marks) – Minimum 50% pass

Clinicals and viva to be conducted by a panel consisting of an internal examiner and an external examiner.

Fee Structure

Total Course Fee:

Total Course Fee: Rs.75, 000/-

Application Procedure

Duly completed application form is to be submitted with necessary documents along with fees in the form of a crossed Demand Draft drawn in favour of "Vinayaka Missions University", payable at Salem. Write your name and course name in the back of DD / Cheque

Application should send to:

The Registrar,

Vinayaka Missions University

NH-47, Sankari main road

Ariyanoor,

Salem-636 308

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