

January-June 2020

Volume 29

Issue 1

PRINT ISSN: 2277-1867

ONLINE ISSN: 2277-8853



# JOURNAL OF FORENSIC MEDICINE SCIENCE AND LAW

Official Publication of Medicolegal Association of Maharashtra

## **Editor-in-chief**

Dr Ravindra Deokar

## **Associate Editors**

Dr Sadanand Bhise

Dr Sachin Patil

**MULTISPECIALITY, MULTIDISCIPLINARY, NATIONAL  
PEER REVIEWED, OPEN ACCESS, MLAM (SOCIETY) JOURNAL**

### **Editorial Office Address**

Department of Forensic Medicine & Toxicology, Third Floor, Library Building, Seth G S Medical College & KEM Hospital, Parel, Mumbai-400 012. Email id: [mlameditor@gmail.com](mailto:mlameditor@gmail.com) Phone: 022-24107620 Mobile No. +91-9423016325



# JOURNAL OF FORENSIC MEDICINE SCIENCE AND LAW

(Official Publication of Medicolegal Association of Maharashtra)  
Email.id: [mlameditor@gmail.com](mailto:mlameditor@gmail.com)

PRINT ISSN:  
2277-1867

ONLINE ISSN:  
2277-8853

## Letter to Editor

### The Scope of Toxicology Services in the Health Care Facilities

Abhijith J<sup>a</sup>, Pathak HM<sup>b</sup>, Parchake MB<sup>a</sup>

<sup>a</sup>Assistant Professor, <sup>b</sup>Professor & Head

Department of Forensic Medicine & Toxicology, Seth G S Medical College & KEM Hospital, Mumbai, Maharashtra, India.

#### 1. Introduction

How often do we hear a case of drug overdose in the country? An unresponsive patient presented with respiratory failure, slow breathing, small pupils, and cyanosis; how many of the clinicians would doubt a chance of Heroin overdose, although it is one of the most common abused drugs in India. In developed countries the diagnosis of such is suspected in all comatose patients, especially in the presence of respiratory depression and small pupils. Although most of the over dose cases are treated with supportive care, in some cases of Methyl Alcohol, Barbiturate, Opioid poisoning etc, requires specific approach in treatment. Since the old times, the role of clinical toxicology in aiding the management of poisoned patient is less spoken. Clinicians often, especially in emergency services would highly agree to the need of toxicology services which would come handy for speedy diagnosis. Toxicology laboratory service for emergency purposes is never set as a priority in the hospital establishments in our country.

#### 2. Toxicology Profession and Career

Clinical and Medical Toxicology are one of the two main disciplines within toxicology. Clinical toxicologists are people who are expert with detailed knowledge and experience of toxicology in dealing with the investigation, diagnosis and management of people exposed to harmful chemicals and toxins<sup>1</sup>. People interested in the field should have a bachelor degree in any science branch which is the minimum requirement. A handful of

institutions in the country provide the course of Master of Science in Toxicology. Although there are qualified toxicology professional in the country due to lack of placement, the career received less reputation. After MSC Toxicology interesting candidates pursue PhD and are attracted to Western countries as of lucrative positions and better facilities. Depending on their area of work, toxicologists can be divided into eight distinct groups: industrial, pharmaceutical, academic, clinical, forensic, regulatory, occupational and ecotoxicology.

#### 3. Medical toxicology

It has wide implications in a developing country like India, but the scope and opportunities are less explored. It focuses on diagnosis, treatment and other adverse health effects due to drugs and other biological agents. Only a medical professional can become a Medical Toxicologist. In western countries like USA, it is a recognized specialty. They must complete a fellowship in medical toxicology. Fellowships consist of 02 years of training, and after that candidates must pass the Medical Toxicology Board exam required for certification. Generally residents of Emergency medicine, Pediatrics and Internal medicine are interested in the field. They are involved in the assessment and treatment of a wide variety of problems, including acute or chronic poisoning, adverse drug reactions, drug overdoses, envenomations, substance abuse, industrial accidents and other chemical exposures.

**How to cite this article:** Abhijith J, Pathak HM, Parchake MB. The Scope of Toxicology Services in the Health Care Facilities. J For Med Sci Law 2020;29(1):73-75.

\***Corresponding author:** Dr Abhijith J, Assistant Professor, Department of Forensic Medicine & Toxicology, Seth G S Medical College & KEM Hospital, Mumbai, Maharashtra, India. Pin-400012 Email: [abhiget000@gmail.com](mailto:abhiget000@gmail.com), (M): +91-9619703903.

**Article Info: Received on:** 04.04.2020; **Accepted on:** 30.04.2020

As can be seen, the knowledge and skills required by the toxicologist are extensive. The range of expertise they may be required to provide can be very variable.

#### 4. Scope of Medical Toxicology in the Country.

Medical toxicology establishments can provide services in the following areas.

- Emergency departments and in-patient units where they directly treat cases of acute poisoning.
- Occupational health settings to investigate the exposure to toxic substances in the home or workplace environment.
- National and regional poison control centers where they provide medical direction for health professionals, personal responders and the general public.
- Industry and commerce where they contribute to pharmaceutical research and development, product safety, occupational health services, and regulatory compliance.
- Clinical and forensic laboratories where they aid in the design, conduction and interpretation of diagnostic tests and forensic studies.
- In government agencies, such as the Centers for Disease Control and Prevention and the Food and Drug Administration, medical toxicologists help with health policy.
- Medical toxicologists are employed to help other physicians prepare for dealing with the aftermath of crimes such as chemical warfare and biological warfare.<sup>3</sup>

As of now not much of the Public health care facilities are equipped with toxicology services. Many public funded toxicological laboratories, including a number of forensic toxicology laboratories, are under the administrative control of law enforcement agencies or under the home department of government. They only accept cases from parent agencies, and due to burden of case loads it takes months to get the results. In sensational cases the law enforcement agencies have to wait longer period, hence charging or acquitting of persons by the judicial system also get shelved, this in turn is a waste of man power and public fund.

Apart from the analytical problems, the legal aspect of the work demands a meticulous attention to detail. Any toxicology test in a clinical laboratory

has the potential to become medical evidence. Failure to make full descriptive notes on the items received a simple error in the date the analysis was performed or break in chain of custody can be presented as evidence of careless work by an experienced lawyer. This makes the job of a toxicologist an exceedingly challenging one but also a very rewarding one. Developed nations have various schemes in regards to Environmental Protection hence the importance of Environmental toxicology is very well appreciated, which assures that all governmental and public sector activities such as industrial, agriculture, etc give proper consideration to the environment prior to undertaking any major federal actions that significantly affect the environment.

#### 5. Conclusion

Poisoning is one of the leading causes of morbidity and mortality in the country and also a major health problem worldwide. It accounts for 30% of suicides in India<sup>2</sup>. Medical professionals as well as the police personal should be made aware of the facilities available through seminars, workshops etc. With the development of society and life style changes new designer drugs are on the market and in order to tackle that it became necessary to develop new test methods with state-of-the-art instruments, qualified technologists to conduct the testing, and experienced and qualified forensic toxicologists to manage the laboratory and to interpret the results. For pharmacological interventions such as invent of new medications, dedicated research facilities should be established as it requires measuring drug levels in body fluids and establishing therapeutic windows for effective treatment.

Better information on prevalent recreational drugs associated with clinical toxicity would also be obtained, which helps in the drug enforcement agencies. Failure in establishment of improved clinical research in clinical toxicology is underscored by the weakness of the evidence base to the management of many poisons. Medical health professionals from Emergency Care, Forensic Medicine, Internal Medicine, Psychiatry and Occupational Health which are in call of Toxicology services should actively push forward the exigency of such to the Policy makers without postponement. Government should approve more courses related

to toxicology and also to increase man power in the field by creating new vacancies.

## **6. Recommendations**

More research should be encouraged in the field of toxicology. Each district should have a toxicological lab where samples are accepted from peripheral locations and if attached with institutions they can serve as a referral centre for poison related cases. Public health care facilities should provide clinical toxicology services at affordable rates. The Government as by opening new labs it offers exciting and varied career opportunities in the field of toxicology. More efficient labs mean more accuracy in the test results and speedy court/legal proceedings, and also Police and other can submit the required samples within the golden period, which is required in most of the cases. Additionally, spoiling of samples can be avoided. Analytical reports and opinions shall be accepted by the legal system. To wind up, failure in establishment with respect to the needs of patient care and health is a distress to the system. Protocol should be formed by the State or National bodies for conducting proficiency surveys, to assess the performance and there by accreditation of such labs. There is a need for higher quality surveillance of the clinical effects of poisoning with newly introduced agents, including therapeutic medications.

## **References:**

1. Thomas SH. An agenda for UK clinical pharmacology: Developing and delivering clinical toxicology in the UK National Health Service. *British journal of clinical pharmacology*. 2012 Jun;73(6):878-83.
2. Erickson TB, Wahl M, Hryhorczuk D, Ramesh A, Shetty N, Varghese P, Prabhakar B. Implementation of an integrated multispecialty poison-control centre in Bangalore, India: results of a pilot implementation. *The Lancet Global Health*. 2017 Apr 1;5:S20.
3. Lappas NT, Lappas CM. *Forensic toxicology: Principles and concepts*. Academic Press; 2015 Nov 14.
4. Piekoszewski, W. and Florek, E., 2005. The role of laboratory examinations in medical toxicology.
5. Rao KN. *Forensic Toxicology: Medico-legal Case Studies*. CRC Press; 2012 Feb 23, (p.11).