



Current Role of Poison Information Center and Poison Control Center

Vijay Kumar AG, Shivaramu MG and Kumar U*

Department of Forensic Medicine and Toxicology, Adichunchanagiri Institute of Medical Sciences, Karnataka, India

Abstract

In biology, poisons are substances that can cause death, injury or harm to organs, tissues, cells, and DNA usually by chemical reactions or other activity on the molecular scales, when an organism is exposed to a sufficient quantity. The primary mission of poison control centres has always been an improvement in the poisoned patients' care and poison prevention. The need to reach this mission implies that many functions and roles must be accomplished. Many centres, even in developing countries, are multifunctional and provide a broad toxicological information service. However, the main challenges of poison centres in developing countries are still treatment information, formal training, laboratory services accessibility and availability of antidotes. In the future, PCs will continue to have a leading role to play in the health protection of the population. Therefore, of particular importance is their mobilisation to stabilise the traditional activities, to initiate new activities, to acquire new skills in toxicology, methodology and quality assurance, to recruit and to train new staff and to find adequate funding to sustain and expand their operations.

Keywords: Poison; Information center; Control center

Introduction

In biology, poisons are substances that can cause death, injury or harm to organs, tissues, cells, and DNA usually by chemical reactions or other activity on the molecular scales, when an organism is exposed to a sufficient quantity [1].

The fields of medicine (particularly veterinary) and zoology often distinguish a poison from a toxin, and from a venom. Toxins are poisons produced by organisms in nature, and venoms are toxins injected by a bite or sting (this is exclusive to animals). The difference between venom and other poisons is the delivery method [2].

Industry, agriculture, and other sectors employ poisonous substances for reasons other than their toxicity. Most poisonous industrial compounds have associated material safety data sheets and are classed as hazardous substances. Hazardous substances are subject to extensive regulation on production, procurement and use in overlapping domains of occupational safety and health, public health, drinking water quality standards, air pollution and environmental protection. Due to the mechanics of molecular diffusion, many poisonous compounds rapidly diffuse into biological tissues, air, water, or soil on a molecular scale. By the principle of entropy, chemical contamination is typically costly or infeasible to reverse, unless specific chelating agents or micro-filtration processes are available. Chelating agents are often broader in scope than the acute target, and therefore their ingestion necessitates careful medical or veterinarian supervision.

Pesticides are one group of substances whose toxicity to various insects and other animals deemed to be pests (e.g., rats and cockroaches) is their prime purpose. Natural pesticides have been used for this purpose for thousands of years (e.g. concentrated table salt is toxic to many slugs). Bioaccumulation of chemically-prepared agricultural insecticides is a matter of concern for the many species, especially birds, which consume insects as a primary food source. Selective toxicity, controlled application, and controlled biodegradation are major challenges in herbicide and pesticide development and in chemical engineering generally, as all lifeforms on earth share an underlying biochemistry; organisms exceptional in their environmental resilience

are classified as extremophiles, these for the most part exhibiting radically different susceptibilities.

Poisoning is a significant global public health problem ranking 45th in total death worldwide. Nearly a million people die each year because of suicide, and it is estimated that deliberate ingestion of pesticides causes 3,70,000 deaths each year. According to WHO data, in 2012 an estimated 1,93,460 people died worldwide from unintentional poisoning. Of these deaths, 84% occurred in low- and middle-income countries. In the same year, unintentional poisoning caused the loss of over 10.7 million years of healthy life [3].

The incidence of poisoning in India is among the highest in the world. It is estimated that more than 50,000 people die every year from toxic exposure. According to the National Poisons Information Centre, New Delhi, analysis of poisoning calls showed that the highest incidence of poisoning was due to household agents (44.1%) followed by drugs (18.8%), agricultural pesticides (12.8%), industrial chemicals (8.9%), animals bites and stings (4.7%), plants (1.7%), unknown (2.9%) and miscellaneous groups (5.6%). The commonest cause of poisoning in developing countries is pesticides which includes organophosphates, carbamates, chlorinated hydrocarbons, pyrethroids and aluminium or zinc phosphide. The reason behind this upsurge is the agriculture based economics, poverty, unsafe practices, illiteracy, ignorance and easy availability of highly toxic pesticides. Majority of victims of poisoning are from lower socio economic status [4].

*Corresponding author: Kumar U, Department of Forensic Medicine and Toxicology, Adichunchanagiri Institute of Medical Sciences, Karnataka, India, E-mail: vijay.fmt@rediffmail.com

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The primary mission of poison control centres has always been an improvement in the poisoned patients' care and poison prevention. The need to reach this mission implies that many functions and roles must be accomplished. Many centres, even in developing countries, are multifunctional and provide a broad toxicological information service. However, the main challenges of poison centres in developing countries are still treatment information, formal training, laboratory services accessibility and availability of antidotes. At the same time poison centres from developing countries need to accomplish their public health mission through strengthening and expansion of some well-defined roles like toxico-surveillance and environmental health monitoring according to the prevailing and future toxicological problems. Poison control centres from developing countries continue to face old challenges but cannot ignore the new ones that appear in the globalised world. Poison centres have a vital role for environmental exposure surveillance systems for sentinel event detection. Poison centres offer real-time and continuous data needed for preparation and response during such events and also offer a means to report health concerns. Centres from South America were involved in some of the most important environmental health problems of the region e.g. lead contamination (children), children 'occupational' poisoning, and flour contamination with fusarium toxins. Furthermore, poison centres can be the markers of risk factors or identifiers of vulnerable population e.g. changes in drugs prescription patterns, unusual patterns of addiction, unexpected product uses, children abuse scenarios or undetected sources of environmental contamination. In an era of evidence-based medicine and research, toxico-vigilance based on the millions of cases registered by poison centres everyday acquires more and more importance. A new approach of the toxico-vigilance and preventive roles of poison information centres lies in their ability to

contribute to risk assessment methodologies with their human data. The data routinely collected by poisons centres could contribute to risk assessment documentation and to define priorities for risk assessment of the harmful chemicals. Although there is some scepticism about the value of poison centres data, the shared volume of human data could validate this information. The international effort of the IPCS/INTOX program, on harmonisation of data collection and terminology for comparable recording of observational human data, has been a great advancement towards handling this problem [5].

Conclusion

In the future, PCs will continue to have a leading role to play in the health protection of the population. Therefore, of particular importance is their mobilisation to stabilise the traditional activities, to initiate new activities, to acquire new skills in toxicology, methodology and quality assurance, to recruit and to train new staff and to find adequate funding to sustain and expand their operations.

References

1. American academy of clinical toxicology; European association of poisons centres clinical toxicologists (2004). Position paper: Ipecac syrup. *J Toxicol Clin Toxicol* 42: 133–143.
2. Vale JA, Kulig K (2004) American academy of clinical toxicology; European association of poisons centres and clinical toxicologist. Position paper: Gastric lavage, Birmingham. UK. *J Toxicol Clin Toxicol* 42: 933–943.
3. World Health Organization (2016) Poisoning prevention and management.
4. All India Institute of Medical Sciences (2016) National poisons information centre, New Delhi. India.
5. Laborde A (2004) New roles for poison control centres in the developing countries, Montevideo. Uruguay. *Toxicology* 20; 273-277.