Crisis and Resilience
Journal Homepage: https://journals.explorerpress.com/cr

Medico-Legal Aspects of Antidotes: Legislation, Drug Stockpiles and Proposals

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KEYWORDS

antidotes
forensics
drug stock

ABSTRACT

The medico-legal aspects relating to antidotes concern their availability, efficacy and correct management in case of intoxication, both accidental and intentional. Forensic medicine, in this context, assesses whether the use of antidotes was appropriate and whether there are responsibilities related to their non-availability or improper use.

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ARTICLE INFO

Received: 8 October 2025 | Revised: 6 November 2025 | Accepted: 7 November 2025 | Published Online: 8 November 2025

1. Introduction

Poisoning remains a significant public health concern worldwide, with profound clinical, forensic, and legal implications. Whether accidental, intentional, or occupational, toxic exposures challenge healthcare systems and legal frameworks alike, demanding coordinated responses from medical professionals, toxicologists, and law enforcement agencies. The medicolegal evaluation of poisoning cases involves complex considerations, including the identification of toxic agents, determination of intent, assessment of liability, and documentation for judicial proceedings [1].

Central to the clinical management of poisoning is the timely and appropriate use of antidotes—substances that counteract the effects of specific toxins. While some antidotes are well-established and widely available, others are rare, costly, or require specialized administration, raising ethical and logistical questions in emergency care. Moreover, the legal responsibilities surrounding antidote administration—such as informed consent, off-label use, and reporting obligations—underscore the intersection between medical practice and jurisprudence [2].

This article explores the principal medicolegal aspects of poisoning, highlighting the role of antidotes in clinical and forensic contexts. By examining case studies, regulatory frameworks, and emerging challenges, we aim to

provide a comprehensive overview that informs both medical and legal professionals engaged in the management of toxicological emergencies [3].

2. Methods and Materials

Availability:
The availability of antidotes is critical, especially in emergency situations. Antidotes need to be easily accessible in emergency services and, where necessary, in other clinical settings.
Effectiveness:
The correct identification of the toxic agent and the choice of the specific antidote are essential to ensure the effectiveness of the treatment.
Management:
The management of intoxication and antidote requires a thorough understanding of the mechanisms of action, possible drug interactions, and side effects.
Responsibility:
Forensic medicine assesses whether there has been negligence or errors in the management of the antidote that have led to negative consequences for the patient. This may include not having the antidote, making the wrong choice of antidote, or inadministering it incorrectly.
Legislation:
Current legislation defines criteria for the management of intoxications, including the availability and use of antidotes.
In summary: The medico-legal aspects related to antidotes focus on their correct availability, effectiveness and management, in order to ensure the protection of public health and identify any responsibilities in case of inadequate management [4].

3. Discussion

Toxicology studies toxicants or poisons and the alterations that these substances produce in the body (intoxication or poisoning).

A substance is toxic when:

a) it is soluble and therefore absorbable;

b) it is capable of damaging the body in small doses;

c) acts by biochemical mechanism by altering cellular functions or damaging cellular structures [15].

The dose of a substance is the quantity capable of giving a certain response and is divided into subliminate, therapeutic, toxic and lethal. On the basis of the LD50 expressed in mg/Kg, substances are classified into: very toxic = 1 mg/Kg; toxic from 1 to 50 mg/kg; moderately toxic from 50 to 500 mg/kg; low toxic: from 0.5 to 5 g/kg; non-toxic from 5 to 15 g/kg; non-hazardous over 15 g/Kg [5].

In addition to acute toxicity, subacute and chronic toxicity are important. The toxic dose and the fatal dose are not constant for the same poison, but vary from subject to subject and vary according to temperature, pressure, humidity, adult or infant age, race, sex, body weight, nutritional status, pregnancy, puerperium, intercurrent diseases [6].

Addiction. The body, due to a phenomenon of adaptation to chronic administrations, gets used to poisons (mithridatism) so that to obtain acute toxic effects it is necessary to progressively increase the dose. Habituation protects against fatal acute intoxication, but not from the damage of chronic intoxication [7].

Idiosyncrasy. It is a congenital or acquired hypersensitivity to certain poisons, small doses, even subliminary, can give lethal toxic effects [8].

Antagonism: it is an action opposite to that of the toxicant; it can be direct if the action is on the same structures (atropine and muscarine), indirect if through different structures (strychnine and curare).

Antidote: a substance that blocks or removes the toxic by means of a chemical or physical combination.

Synergy: it is an increase in the intensity or duration of a toxic action by means of another toxicant; the combination can be the sum of the effects of the individual compounds (additive synergism), or it can exceed it (potentiation).

Classification of toxicants:

According to origin: mineral, vegetable, animal and synthetic.

According to the chemical nature: alkalis and caustic acids, gaseous and volatile compounds, metals and metalloids, aliphatic organic compounds, aromatic organic compounds, alkaloids, glycosides, plant toxins.

According to the effects:

a) irritants and caustics, they have a blistering and corrosive effect on the contact surfaces with the production of eschar, ulcers and perforations on the gastrointestinal mucosa if ingested, and lesions of the respiratory tract and lungs up to pulmonary edema if inhaled;

b) haemotoxic, poisons that combine with haemoglobin to form carboxyhaemoglobin (CO) or methemoglobin act on the blood; the poisons that damage the stroma of red blood cells; substances that alter the blood clotting system; myelotoxics;

c) cardiotoxic, acting on the cardiac myocell or on the conduction pathways;

d) neurotoxic, such as hypnotics; drugs; psychotropic drugs; alkaloids; finally ethyl and methyl alcohol and trichloroethylene;

e) parenchymotoxic (hepatotoxic and nephrotoxic), have the property of causing serious degenerative and necrotic events of the parenchymatous organs, especially of the emunctories, causing hepatitis and nephritis; organic products for industrial use; mushroom poisons and abortifacients;

f) systemic toxicants, they have a strong diffuse cytoplasmic toxic action;

g) other effects: teratogenic, carcinogenic, allergotoxic, drug-addictive and criminogenic [9,10].

Classification of intoxications.

Exogenous or endogenous, fulminant, if they lead to death in a few seconds or minutes, hyperacute, in a few hours, acute, in a few days, subacute, in one or more weeks, chronic, with a course of months or years. [11]

Desired intoxications:

a) criminal if they have reference to homicide or bodily injury. Intentional homicide by poison is currently rare.

b) suicidal, constantly increasing because the use of poison represents a means that is neither brutal nor traumatizing and allows a safe effect and a painless death.

c) voluptuary.

d) self-harming, caused to evade military service obligations or with the intention of unduly benefiting from insurance benefits.

e) abortifacients, represented by substances taken orally, vaginally, determine a state of intoxication, even fatal.

f) judicial, as a means of execution.

g) from causes of war due to the use of asphyxiating gases in the context of chemical warfare.

Accidental poisoning:

a) foodstuffs, originate from the consumption of foods polluted with toxic compounds, from the adulteration of products intended for food, from the addition of preservatives or harmful dyes or from the natural toxicity of certain foods. These intoxications are often collective.

b) domestic, frequent especially in the care of children.

c) professional, contracted in the exercise of agricultural and industrial activities that expose to the action of toxic products.

d) medicinal products, either involving children attracted by the colour and taste of some unattended preparations, or iatrogenic in nature due to unexpected synergism between drugs, defects in elimination through excretory artertories, individual hypersensitivity, overdose or serious side effects [11,16].

Toxicokinetics:

Routes of introduction. The digestive tract is the most used, the maximum absorbent power belongs to the small intestine for basic substances and to the stomach for acidic ones. The respiratory tract is typical of gaseous and volatile products, it is the most important route of intake of occupational toxicants and harmful environmental substances. Fat-soluble or volatile toxicants are easily absorbed through the skin. Another route is represented by the mucous membranes, nasal, rectal and vaginal [12].

In addition to the natural pathways, there are artificial pathways such as the parenteral or other more complex pathways.

Certain poisons that are destroyed by gastric juices act only parenterally.

Transformation of toxicants. All substances undergo biotransformations that generally lead to less toxic catabolites ready for elimination [13].

Routes of elimination. The main routes are represented by natural emunctories. The renal route is the most important and most of the toxicants taken or their transformation products are found in the urine.

Provisions of the Criminal Code that consider the use of poisons:

Article 439 - Poisoning of water or foodstuffs.- Anyone who poisons water or substances intended for food, before they are drawn or distributed for consumption, shall be punished with imprisonment of not less than fifteen years. If the fact results in someone's death, life imprisonment applies [14].

Art. 577 - Other aggravating circumstances (life imprisonment).- The penalty of life imprisonment is applied if the fact provided for by art. 575 (murder) is committed... by means of poisonous substances, or by another insidious means.

Art. 585 - Aggravating circumstances.- In the cases provided for by articles 582, 583 and 584 (bodily injury, aggravated l.p. and manslaughter), the penalty is increased from one third to one-half, if none of the aggravating circumstances provided for in art. 576; and increased up to one third if any of the aggravating circumstances provided for by art. 577, or if the act is committed with weapons or corrosive substances [10,17].

For the purposes of the criminal law for weapons, the following are meant:

1) those for gunfire and all others whose natural destination is the offense to the person [c.p. 704];

2) all instruments capable of offending, the carrying of which is absolutely forbidden by law, i.e. without justified reason.

Explosive materials and asphyxiating or blinding gases are assimilated to weapons [16].

MEDICO-LEGAL DIAGNOSIS OF POISONINGS

Suspicion of intoxication. It can arise from various elements:

- the abrupt onset of a morbid picture in a person in apparent good health;
- the occurrence of a death in mysterious circumstances;
- the presence of unusual skin stains and cadaveric hypostases;

- the perception of odors emanating from the breath or from the material vomited by the intoxicated person or when opening the corpse;

- the colouring of blood and urine that is different from the usual one;

- The appearance of alarming and inexplicable symptoms, such as cyanosis, vomiting, seizures or sudden coma.

The diagnostic procedure must pursue the differential diagnosis between poisoning and other morbid facts, the recognition of the toxic agent, the ascertainment of the methods and route of introduction of the toxicant, the evaluation, in living beings, of the severity of the intoxication deducible from the relationship between dose and toxic effect. Diagnosis is based on clinical, anatomical, chemical, biological and circumstantial criteria.

Clinical criterion.

Medical history. Collected by the patient himself or by relatives and acquaintances, it tries to specify the subject's morbid history, his life and work habits, whether an illness was in progress and, if possible, the quantity, time and methods of purchase and intake of the poisonous substance.

Local symptoms. Caustics cause necrotic lesions around the mouth, in the oral cavity and in the pharynx, which are blackish (sulphuric acid), yellowish (nitric acid), grayish white (hydrochloric acid) or shiny yellowish white (alkali).

Digestive symptoms.

Mouth: dryness (atropine), salivation (phosphoric esters), gingival border (lead, mercury, arsenic, bismuth), necrotic lesions (caustics and solvents).

Acute gastro-intestinal syndrome: caustics, phosphorus, arsenic, lead, fungi, mercury, cantharidin, salicylates, castor, nicotine, insecticides, colchicus.

Digestive haemorrhages: anticoagulants, caustics, salicylates, phosphorus, cortisone, sulfonamides, phenylbutazone.

Hemolytic jaundice: aniline, ricin, nitrobenzene, quinine, sulfonamides.

Cytolytic jaundice: arsenic, phosphorus, amanita phalloid and verna, solvents, antimitotics, phenothiazine, chloroform, picric acid.

Respiratory symptoms.

Bradypnea: opiates, barbiturates, curare, picrotoxin, heroin.

Tachypnea: atropine, cocaine, amphetamines, carbon dioxide, lobeline, salicylates, formaldehyde.

Dyspnoea: cyanides, phosphoric esters, muscarine, prostigmine.

Respiratory paralysis: opiates, hypnotics, sedatives, anesthetics, snake venom, curare, cyanides, benzene.

Pulmonary oedema: chlorine, bromine, phosgene, nitric and nitrous vapours, sulphur dioxide, toxic gases in general. Inhalation of irritating gases or vapours causes acute respiratory tract symptoms with burning retrosternal pain, convulsive cough, mucosal or blood expectoration and intense dyspnoea. In severe cases, pulmonary edema with anoxia and respiratory paralysis may appear.

Nervous symptoms.

Coma: bromides, ethyl alcohol, acetone, tetracl. carbon, CO, cyanides, hypnotics, opiates, tranquilizers, ganglioplegics, neuroleptics.

Seizures: strychnine, picrotoxin, cocaine, nicotine, phenothiazines, antipyrine, camphor, caffeine, barium chloride.

Agitation and delirium: atropine, alc. ethyl, amphetamines, hallucinogens, antihistamines, salicylates, carbon disulfide.

Neuro-muscular paralysis: curare, thallium, arsenic, aconitine, botulism, snake neurotoxins.

Genito-renal symptoms.

Anuria: mercurials, bismuth, phosphorus, sulfonamides, turpentine, ac. oxalic, trinitrotoluene, carbon tetrachloride.

Hematuria: anticoagulants (ratticides), ac. acetylsalicylic.

Metrorrhagia: phosphorus, lead, nicotine, quinine, cantharidin.

Circulatory system.

Bradycardia: digitalis, muscarine, physostigmine, veratrine, strophantus.

Tachycardia: atropine, caffeine, cocaine, ephedrine, amphetamines.

Hypotension: nitrates, nitrites, nitroglycerin, aspirin, barbiturates, chloropromazine, CO.

Hypertension: ergotine, cortisone, nicotine, epinephrine, lead, mercury.

Extrasystoles and cardiac fibrillation: all the above.

Changes in blood pigment: methemoglobinizing poisons, carbon monoxide.

Medullary aplasia, agranulocytosis, thrombocytopenia: benzene, sulfonamides, arsenobenzols.

Sense organs.

Vision: amblyopia from alcohol, nicotine, quinine, barbiturates, phosphoric esters; Colored vision by santonina, digitalin, mescaline.

Hearing: Quinine deafness, streptomycin.

Nose: chromium, phenol anosmia.

In clinical practice, the diagnosis and treatment of acute intoxications are based on the rapid collection of essential information: route of intake, nature of the toxicant and condition of the patient; In medico-legal practice, the symptomatic criterion is missing when the patient has died suddenly or without assistance, it may be insufficient if the information collected is fragmentary or is inferred indirectly through the judicial inspection and witness statements, it is unreliable if there is a suspicion that the circumstances relating to the symptomatology are kept silent or intentionally altered in order to divert the investigation.

Anatomical criterion.

The anatomical-pathological finding can point in two directions: a) exclude poisoning if a cause of death attributable to natural facts is found that no poison could cause (rupture of aneurysms, heart attacks, massive cerebral apoplexy, pulmonary thrombo-embolism). b) confirm poisoning when the anatomical lesions found are characteristic or do not conflict with the clinical symptoms and the results of the chemical analysis. Negative findings are found in many poisonings, positive ones in the case of toxic substances that influence the course of cadaveric phenomena.

The autopsy must be completed by histological examinations of the viscera and histochemical research for the localization of the toxicant in the viscera.

Cadaveric phenomena.

Rigidity: early (strychnine, nicotine, atropine, veratrine, cocaine, picrotoxin), delayed (opiates, narcotics, arsenic, phosphorus).

Hypostasis: carmine red (CO), light red (hydrogen cyanide, cyanides), bluish slate (methemoglobin).

Temperature of the corpse: death in hyperthermia (strychnine, aconitin, picrotoxin), death in hypothermia (alcohol, phosphorus, arsenic).

Dehydration: rapid in poisonings with predominant diarrhea (mercury, colchicine, cantharidin, phenolphthalein, bromine).

Putrefaction: early (opiates, snake vel.), delayed (phenic acid, formalin, sublimated, permanganate, sulfonamides, antibiotics).

External finds.

Skin staining: cyanotic (respiratory failure due to toxicants), see hypostasis and clinical criterion (jaundice).

Skin appendages: alopecia (thallium, aminopterins), nails and hair (arsenic).

Skin excises: lips (caustics and solvents), extremities (ergotine).

Rashes: chromium, sulfonamides, antibiotics, salicylates, cosmetics, iodine and bromic acne, insect bites.

Internal finds.

Odours: garlicky (phosphorus, phosphoric esters), bitter almonds (cyanides, nitrobenzene), rotten eggs (hydrogen sulphide), peculiar (alcohol, ether, chloroform, trichloroethylene, benzene).

Serous and visceral petechiae: arsenic, lead, CO, phosphorus, sublimated.

Blood fluidity: opiates, vel. snakes, anticoagulants, CO.

Viscera colour: blue-grey (silver), blackish (bismuth, sulphuric acid, phenic acid, acetic acid), greenish (hydrogen sulphide, copper sulphate).

Respiratory system: hyperemia, ulcers and mucous necrosis, haemorrhages, pulmonary oedema (gases, irritating, asphyxiating, caustic vapours.

Cardio-vascular system: myocardosis (phosphorus, arsenic, mercury, CO, alcohol, ether, chloroform, nitrobenzol, botulism), vessel thrombosis (alkali, acids, CO, arsenic), angiosclerosis (lead, mercury).

Digestive system: stomatitis (bismuth), gastro-enteritis (arsenic, phosphorus, antimony), eschar, ulcers and perforations (caustic, corrosive, sublimated, mercury, phosphorus, chromium, formol, solvents, essential oils).

liver: fat degeneration and necrosis (phosphorus, lead, arsenic, alcohol, phalloid and verna manita, apiol, carbon tetrachloride, chloroform, arsenobenzols, hydrogen cyanide, organochlorates), colostatic hepatitis (methyltestosterone, chlorpromazine).

Kidneys and urinary tract: tubuloglomerular nephrosis (mercury, phosphorus, bismuth, arsenic, chromium, antimony, oxalic acid, sulphuric acid, hydrochloric acid, chloroform), hemoglobinuric nephrosis (ricin), glomerulonephritis (cantharidin), cystitis (sublimated, aniline).

Hematopoietic organs: bone marrow aplasia (arsenobenzols, gold salts, antimitotics, benzene), hemolytic anemia (phenacetin, sulfonamides, phenylhydrazine, salicylates, arsenate Pb), agranulocytosis (benzene, pyramidadone, cytostatics, thiouracil), leukemias (benzene and derivatives).

Nervous system: congestion edema, microsoftening, cerebral purpura (anesthetics, alcohol, CO, hydrogen cyanide, benzene).

Chemical criterion.

It is based on the demonstration of poison in viscera and organic materials.

Biological criterion.

It consists in administering substances suspected of containing a certain poison to animals, specially chosen for their sensitivity (frogs, mice, fish), or to preparations of isolated organs, in quantities too small to allow complete chemical research.

General toxicity tests. It is represented by signs of poisoning more or less characteristic of a given toxicant. The absence of signs does not exclude the toxicity of the substance.

Elective biological actions. Curare acts on neuromuscular plaques causing flaccid paralysis. Strychnine excites the posterior horns of the spinal cord with generalized tetanus. Apomorphine causes vomiting (bulbar center). Veratrin induces a typical muscle contraction by action on striated muscle. Phosphoric esters inhibit cholinesterases with parasympathomimetic effects responsible for the toxic action [18].

Characteristic biological reactions. Strychnine injected into the frog triggers generalized muscle tetanus. The morphine, injected under the skin, causes the tail of the white mouse to rise and curve in an S-shape. Nicotine causes the excullent frog to assume a characteristic attitude of the limbs and body. Muscarine, in the frog or other

cold-blooded animal, stops the motion of the heart which after some time spontaneously resumes beating despite the persistence of the muscarine in such quantities as to stop the heart of another animal. Curare paralyzes the contraction of the gastrocnemius muscle when excited through the nerve, but not when excited directly by faradic current.

The biological criterion, used mainly for the search for alkaloids, is now largely replaced by chromatographic techniques, which are able to differentiate the various natural alkaloids.

Circumstantial criterion.

Through documents, testimonies or direct investigations, the judge tries to ascertain whether the suspect had any reason for resentment, interest or other reasons to suppress the victim, if he had tried to procure or already possessed some poisonous substance, if he had been in a position to give poison to the person who had died. This criterion includes information relating to the family environment of the suspect and the deceased and those concerning the personality, profession, life habits, moral or criminal history of the protagonists [19].

From the information on the onset and course of the disease, the methods, doses and routes of administration can be hypothesized.

The extrinsic circumstances of the poisoning (presence of a gas stove, contact with toxic substances at work, syringes, farewell notes will point to an accidental, occupational or suicidal origin.

The toxicological report.

Toxicological investigation on living beings. It consists of knowing the circumstances of the fact through the anamnesis and framing the clinical manifestations observed in a classification group of orientation, confirming the diagnosis with the chemical search of the suspected toxicant in the blood and urine. In acute and severe cases, with major organic insufficiencies (nervous, cardiac, respiratory or renal) predominating, the symptoms of intoxication are masked, so that a specific diagnosis is almost always impossible, as well as in the case of the intake of mixtures of substances with different toxic effects.

Toxicological investigation on the corpse.

a) External examination of the corpse. It consists of looking for abnormal skin discoloration and hypostatic spots, checking the state of cadaveric phenomena, ascertaining local skin lesions and signs of recent acupuncture.

b) Autopsy technique. The Italian Instructions of the Medico-Legal Technique of Judicial Authorizations were issued by the Minister Keeper of the Seals Fani in 1910 and are still in force.

First of all, the whole corpse must be weighed, then the individual viscera deprived of their contents, and finally also the samples taken in order to determine the total quantity of poison taken and its distribution in the various organs.

The vertebral specus must always be opened for the examination of the spinal cord and pay attention to the particular odors that emanate from it when the internal cavities are opened. The external and internal alterations of the individual organs are described without washing them in water so as not to remove any toxic substances.

Each viscera should be placed separately in new, well-washed and dried hermetically sealed glass jars, without the addition of preservative liquids, but possibly frozen at -20 °C.

- Brain and spinal cord;

-heart;

- lungs (in two distinct vessels if a post-mortal introduction of the venom is feared);

-trachea;

-larynx;

- blood (taken from the heart and large vessels; in special cases to be kept separate from that of the right heart from that of the left heart);

-spleen;
- kidneys (in two separate vessels if...);
-urine;
- urinary bladder;
-esophagus;
- stomach and its contents;
- small intestine and its contents;
- large intestine and its contents;
-bile;
- liver and gallbladder;
- portions of skeletal muscle;
- an articular head with a shaft section and a flat bone of the skull or pelvis;
- a sample of skin, particularly if it is the site of hypodermic injections;
- a sample of subcutaneous fat;
- a sample of scalp with hair.

In the case of exhumation, samples of earth located around the mortuary coffin, fragments of the internal metal lining of the coffin itself, pieces of colored clothing worn by the corpse and slurry from putrefactive colliquation must be taken.

c) Chemical-toxicological research.

Medico-legal investigations in case of poisoning.

Rules of procedure.

a) An autopsy is always necessary in case of poisoning and should be performed as soon as possible.

b) The judge, by attending the examination of the corpse, ensures compliance with the Instructions on the Medico-Legal Technique. It is the responsibility of the office to close, by means of a seal with sealing wax, the jars containing the finds and their translation to a convenient place, which is usually an institute of forensic medicine. The judge will not hand over all the material taken to the chemist, but will order that part of it be retained for possible control analyses. The unsealing and opening of the jars are done by the chemical expert in the presence of the judge and the parties. The material that is not used for chemical analysis is placed back in the individual vessels, which are resealed by the office in order to eliminate any possibility, accidental or not, of subsequent pollution of the material itself [20].

c) The specific evidence includes information relating to the circumstantial criterion, as well as the results of the judicial inspection and testimonies.

d) It must be ascertained whether the poisoning was due to suicide, accidental or intentional or negligent responsibility of others.

e) The insidious nature of the poison must be verified on the basis of the organoleptic properties of the toxicant, the method of administration and the condition of the victim.

The circumstantial investigations. Criminal toxicology today has declined enormously in importance due to the rarity of murders with poisoning, on the other hand, there has been an impressive increase in accidental or culpable poisoning, due to food fraud, or caused by the domestic environment or caused above all by ecological pollution as a result of the danger of agricultural and industrial work environments and motorization products. Poisonings are therefore becoming more and more anonymous and collective, and with this the difficulty of identifying the sources and those responsible increases.

Doctor's duties. The questions asked to the doctor are: the nature of the toxic substance responsible for death; the route of administration; the quantity administered; the vehicle by which the poison was introduced into the body; the way of elimination; the time and place where the poison was taken [6].

The toxicologist is required to inform the judicial authority that the circumstances in which the poisoning occurred are such as to admit a criminal act as possible by means of the report or report. Reporting is necessary when it comes to intentional or negligent intoxication resulting in death or personal injury that can be prosecuted ex officio. It is also necessary in the case of attempted or consummated suicide, since there may be instigation by third parties. Many apparently accidental poisonings (food, domestic or medicated) instead conceal culpable liability [1,4,5].

Occupational poisoning occurring in agricultural and industrial workers involves the doctor reporting it according to the provisions of the Consolidated Law on Insurance against Accidents at Work and Occupational Diseases.

Other reports requested on the subject are: a) the report of pesticide intoxication; b) the reporting of drug-addicted people; c) the denunciation of facts concerning public health; d) the reporting of the causes of death when the lethal event depends on an intoxication, the accidental, suicidal, homicidal or occupational nature of which must be specified and information must be provided about the means or manner in which the intoxication itself occurred.

4. Conclusions

The medico-legal aspects related to antidotes focus on their correct availability, effectiveness and management, in order to ensure the protection of public health and identify any responsibilities in case of inadequate management.

Publishing Ethics

This article is fully compliant with the Journal's Publishing Ethics.

Funding

This work received no external funding.

Conflicts of Interest

The authors declare no conflict of interest.

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