

## INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE EMERGENCY DEPARTMENT

**Francisco Javier de Morena.** Nurse Specialist in pediatric nursing. Work Nurse. Care Coordinator of the Neonatology Unit of the HRUM. Member of the research group in Care of Malaga IBIMA AA-20 INVESCUIDAMETODOLOGÍA.

**Irene Rueda Jiménez.** Nurse Specialist in pediatric nursing. Master's degree in pharmacotherapy for nursing in 2013 by the University of Valencia. University expert in advanced care in applied nursing in 2016 by the University of León.

**Luis Francisco Torres Pérez,** PhD in Health Sciences from the University of Malaga. President of the SAECC-ASADENCA. Nurse Block of Quality in Care of the Regional University Hospital of Malaga. Member of the research group in Care of Malaga IBIMA AA-20 INVESCUIDAMETODOLOGÍA.

**Abstract:** Paediatric Emergency Department consultations have experienced a discreet increase in recent years. Although the greater presence of safety caps and better health education of families seemed to justify a decrease in the number of consultations in the Pediatric Emergency Department. In recent years there has been an increase in the number of consultations for recreational alcohol poisoning (Beatriz Azkunaga et al., 2011). The aim of this document is to contribute to the standardization of practice in this area by providing the best available evidence.

**Key words:** intoxication, emergency, screening, toxidromes, antidotes.

## INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE ED

### METHODOLOGY

---

A systematic review was carried out by accessing databases such as Pubmed, Scielo, and the Virtual Library of the Andalusian Health System. We included scientific articles in Spanish, with a maximum age of 5 years. Subsequently, we analysed those associated with poisoning in paediatric age and its management.

### IMPORTANCE OF THE ISSUE

---

Poisoning is the fifth leading cause of death due to unintentional injury, with children under 5 years of age, and especially children under 2 years of age, being the most vulnerable (Arroyo, Rodrigo, & Teresa Marrón, 2014). Poisonings in the paediatric age attended in hospital Paediatric Emergency Departments in our environment account for about 0.30% of the consultations attended (B Azkunaga, Mintegi, Salmón, Acedo, & Del Arco, 2013).

More than 90% of poisonings occur in the home and with household products. While it is true that mortality has decreased, the same is not true for morbidity and consumption of health resources. Up to 25% of unintentional poisonings occur by storing certain substances in containers other than the original ones or leaving them within the reach of children. In this regard, caustics alone account for 3% of the total. Another 6% of poisonings are due to errors in the administration of medicines (Mintegi et al., 2015). The groups of drugs most involved were psychotropic drugs (24.5% of all unintentional drug poisonings), antitarrhal (16.2%) and antipyretics (15.4%), with benzodiazepines being the most frequently recorded group of psychotropic drugs (85.7%) (Zubiaur, Salazar, Azkunaga, & Mintegi, 2015).

In a study carried out in our country, it was pointed out that between 12-17 years of age, the highest percentage of intoxications occur for recreational purposes (45%) and for self-intoxication (27%) (Martínez-Sánchez et al., 2020).

## INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE ED

### EMERGENCY MANAGEMENT

---

#### ANAMNESIS

##### *A. Patients.*

We can differentiate 2 large groups of patients who consult for a possible intoxication:

- Preschoolers-school children under 5 years of age: they constitute the largest group, in which intoxications have the following characteristics:
  - Non-voluntary.
  - Usually at home.
  - For near-immediate reference.
  - Children are usually asymptomatic.
  - The poison is known.
  - The prognosis is generally favorable.
- Adolescents, whose intoxications are distinguished by:
  - They can be intentional (usually with recreational and, less often, suicidal intent).
  - Often outside the home.
  - Consult with longer evolution time.
  - Generate symptoms very often.
  - The toxicant is not always known.
  - More complex handling.

A separate group, of very low volume, but of great importance, are intentional poisonings for homicidal purposes or those that occur in the context of abuse (Mintegi et al., 2015).

##### *B. Screening tools*

The tools for the detection of exposure that have been classically used are reduced to the questionnaire to parents or children, and there is no standardized and consensual toxicological screening applied in paediatric emergency departments. It is important to establish 4 fundamental points, because depending on this the action will be different (Garcia-Algar, Cuadrado González, & Falcon, 2016).

- The type of toxicant: it is important to highlight the existence of substances that are usually non-toxic, the ingestion of which does not generally produce symptoms. Although no chemical agent is completely safe, the materials listed in the annexes (see Table 1. Substances usually non-toxic ) have been ingested and have not produced significant toxicity, except in cases of massive ingestion. Non-toxic ingestion occurs when a person consumes a product that does not normally produce symptoms.
- The route of exposure: depending on how contact with the poison occurred, the way of eliminating it will also be different.
  - Ophthalmic or cutaneous exposure: chemical agents, insecticides, topical drugs, systemic drugs applied topically, traditional remedies, etc.

## INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE ED

- Respiratory exposure: CO poisoning.
- Digestive exposure: the most frequent.
  
- The time elapsed since the contact: when in doubt as to whether the agent with which you have had contact is toxic or not, it is best to seek specialized attention as soon as possible.
  
- The amount: the average swallow volume of a child under 5 years old is 5ml, of 10 years old is 10ml and of an adult is 15ml (Beatriz Azkunaga, Mintegi, Bizkarra, Fernández, & of the Spanish Society of Pediatric Emergencies, 2011).

### EXPLORATION

A child with poisoning can be confronted with various situations:

- Life-threatening situation: this does not usually occur in accidental poisonings, but it does occur in recreational poisonings, although not always.
- Symptomatic but stable patient. In this case, there may be someone around to report what happened or, on the contrary, it will be necessary to intuit it through the symptoms: altered level of consciousness, metabolic acidosis, cardiorespiratory compromise, etc.
- Asymptomatic patients who have ingested a toxic substance and whose effects are manifested in the long term ("time bombs") as may occur with paracetamol, MAOIs, iron, lithium, mushrooms, etc. Each toxic substance must be known in order to act in a specific way.
- Contact with a non-toxic substance at known doses. This is the most common reason for consultation in children. It is important to ensure the non-toxicity of the product, reassure the companions and insist on the importance of preventing this type of accident.

Knowledge of toxidromes, as a set of signs and symptoms observed after exposure to a substance (Bhaskaran et al., 2015), will allow us to effectively guide initial emergency care, through basic diagnostic guidance (*Society guideline links: Treatment of acute poisoning caused by specific agents other than drugs of abuse - UpToDate, n.d.*).

An appendix is included at the end with tables identifying the main serious alterations and relating them to the substances that can potentially cause them (See tables Table 2. Electrocardiographic Abnormalities Induced by Drugs and Toxins Table 3. Toxicants that induce hemodynamic changes ,Table 3. Toxicants that induce hemodynamic changes Table 4. Toxics that alter thermoregulation ) (*Society guideline links: Treatment of acute poisoning caused by specific agents other than drugs of abuse - UpToDate, n.d.*).

### MANAGEMENT OF THE INTOXICATED PATIENT

---

#### Support Measures.

The initial management of a possible poisoning would be:

## INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE ED

- Life support measures if the situation is critical: ABCDE (Martínez-Sánchez et al., 2020).
  - A. Airway: maintain a patent airway: facilitate opening and aspirate secretions if present.
  - B. Ventilation: assess auscultation, respiratory rate, O2 saturation and capnography. If there is respiratory difficulty, apply O2 with mask and reservoir at 15litres/min.
  - C. Circulation: assess cardiac auscultation, HR, BP, pulses, skin temperature and capillary refill. If there is circulatory compromise facilitate venous access for volume administration and/or vasoactive drugs.
  - D. Neurological assessment: assess level of consciousness, pupils and motor reactivity. If the level of consciousness decreases, maintain a permeable airway, administer O2 considering endotracheal intubation and obtain venous access.
  - E. Exposure of the patient: always try to maintain the patient's privacy, whether the care takes place in a hospital or outside it. Avoid the presence of non-essential personnel and, if possible, facilitate the presence of parents in the case of a minor.
- Surveillance in those stable patients who may subsequently present some problem derived from the poisoning, in this case the surveillance consists of (Beatriz Azkunaga et al., 2011):
  - Performance of laboratory tests.
  - Measures to reduce the absorption of the toxicant.
  - Administration of antidotes.
  - To favour the elimination of the toxicant.

### Emergency Department Approach

Depending on the contact route (Martínez-Sánchez et al., 2020):

- Ophthalmic contact: after contact with a chemical agent, the eye should be washed abundantly with water or saline solution for 20 minutes. Subsequently, depending on the agent, referral to a specialist will be assessed.
- Skin contact: this can be with insecticides, solvents, topical anesthetics (EMLA type). Clothing should be removed and washed with soap and water.
- Inhalation: the most important thing is to remove the patient from the source and administer 100% O2.
- Oral ingestion: this is the most common, and decontamination of the digestive tract must be performed. Currently the technique of choice is the administration of activated charcoal, leaving gastric lavage as a second choice for those situations in which charcoal is not indicated. The administration of cathartics and total intestinal lavage are performed very occasionally. Syrup of ipecac is banished in the

## INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE ED

management of the intoxicated pediatric patient (Lapus, Slattery, & King, 2010).

### Therapeutic intervention

(Mintegi et al., 2015) (Martínez-Sánchez et al., 2020).

- Use of Activated Charcoal. As mentioned above it is the method of choice. It will be administered if the toxic substance has been ingested in less than 1-2 hours, since most liquid poisons are absorbed in about 30 minutes, and in the case of solids in 1-2 hours. After this time, decontamination is not very effective. It should be mixed with water to obtain a slurry of at least 25g per 200ml of water.
  - In < 1 year: 1g/kg.
  - 1-14 years: 0.5-1g/kg (max. 25-50g)
  - In > 14 years: 25-100g.

If the child has not taken the charcoal within 20 minutes, it is indicated to administer it through a gold or nasogastric tube. In general, one dose is usually sufficient except in the case of ingestion of delayed-release substances (Carbamazepine, Dapsone, Phenobarbital, Quinine...) or substances with active enterohepatic recirculation (Digoxin, Indomethacin, tricyclic antidepressants...). It can be associated with gastric lavage in the case of acute poisoning with vital risk, decreased level of consciousness (prior protection of the airway) or if there has been or there is a risk of seizures.

#### **CONTRAINDICATIONS:**

- Altered level of consciousness with unprotected airway.
- Ingestion of unfixed substances: heavy metals (iron, lithium), alcohols, hydrocarbons and caustics.
- Gastrointestinal perforation or bleeding.

#### **Possible complications:**

- Vomiting: if vomiting occurs within 30 minutes after administration of charcoal, a new dose at 0.5g/kg can be administered.
  - Bronchoaspiration.
  - Absorption of antidotes.
- Gastric lavage. It is performed in the case of patients with ingestion of large quantities of toxic substances, which can deteriorate in the first hour after contact and in the case of ingestion of toxins that cannot be absorbed by activated charcoal. It should be performed within 1-2 hours after ingestion because after that time it may not be effective.

## INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE ED

### PROCEDURE:

- Protect the airway or if intubation is not possible.
- Insert gold or nasogastric tube.
- Patient in left lateral decubitus and trendelemburg.
- Aspirate gastric contents.
- If needed, a dose of activated charcoal can be introduced and wait 5 minutes to start.
- Subsequently instill warm saline solution at 10ml/kg (max. 200-300ml).
- Massage upper left quadrant.
- Aspirate gastric contents and instill again.
- The operation is repeated until the contents are clear.
- If indicated, a new dose of activated charcoal or antidote, if available, is administered.

### ANTIDOTOS

---

These are substances that cancel or reduce the toxicity of a given substance by inhibiting its action in the body, or by transforming it into an inactive metabolite and/or favouring its elimination. Table 5Antidotes lists some antidotes (Mintegi et al., 2015).

In case of poisoning it is important to know where or who to go to: Institute of Toxicology and paediatric emergency services.

INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE ED

ANNEXES

Table 1. Substances usually non-toxic

Substances usually non-toxic	
Abrasives	Sweeteners (saccharin, cyclamate)
Bath oil	Fertilizers (no herbicides or insecticides)
Engine oil	H2O2
Mineral oil (except suction)	Incense
Body Conditioners	Soaps and bubble bath soaps
Watercolors	Pencil (graphite, colors)
Adhesives	Bleach <5% sodium hypochlorite
Toilet water	Calamine lotion
Seaweed	Hand lotions and creams
Air fresheners (spray and refrigerator)	Lubricants
Antacids	Eye make-up
Antibiotics (most)	Putty (less than 60g)
Clay	Zinc oxide
Prussian Blue	Dehumidifying packs
Lipsticks	Toothpaste
Bitumen (if it does not contain anilines)	Perfumes
Glitter	Newspaper
Bronzers	3% Peroxide
Matches	Paint (interior or latex)
Cigarettes	Hair products (tonics, sprays, dyes)
Glues and glues	Soft Purging
Colonies	Silica gel
Blush	Fabric softeners
Contraceptives	Plugs
Corticosteroids	Thermometers (elementary HG)
Cosmetics	Ink (black, blue - not permanent)
Baby Cosmetics	Ballpoint ink
Easy erase markers	Chalk
Shaving creams and lotions	Vaseline
Liquid shampoos	Candles (beeswax or paraffin)
Iodophilic disinfectants	Vitamins
Deodorants	Warfarin (<0.5%)
Detergents (phosphate type, anionic)	Plaster

Source: Azkunaga B, Mintegi S, Salmón N, Acedo Y, Del Arco L. Poisonings in children under 7 years of age in Spain. Aspects for improvement in prevention and treatment. An Pediatrics. June 1, 2013;78(6):355-60.



INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE ED

Table 2. Electrocardiographic Abnormalities Induced by Drugs and Toxins

Electrocardiographic abnormalities induced by drugs and toxins			
Bradycardia / AV block	Supraventricular Tachycardia	Ventricular Tachycardia	QRS and QT prolongation interval
<b>Beta-blockers</b>	<b>Sympathomimetics</b>	<b>Sympathomimetics</b>	<b>Antidepressants</b>
<b>Calcium channel blockers</b>	Amphetamines	Cocaine	<b>Antipsychotics</b>
Cardiac glycosides	Cocaine	Amphetamines	<b>Antihistamines</b>
Digoxin	Theophylline	Theophylline	Diphenhydramine
Digitoxin	Caffeine	<b>Antidepressants</b>	Astemizole
Red shearing	Methylphenidate	TCA	Terfenadine
Digitalis lanata	Ephedrine	<b>Antipsychotics</b>	<b>Antiarrhythmics</b>
Digitalis purpurea	Pseudoephedrine	<b>Phenothiazines</b>	Quinidine
Bufotenin	Albuterol	<b>Chlorinated hydrocarbons</b>	Disopyramide
Oleander	Dobutamine	Chloral hydrate	Procainamide
<b>Alpha-adrenergic agonists</b>	Epinephrine	Solvents	Propafenone
Phenylpropanolamine	Dopamine	<b>Fluoride</b>	Flecainide, encainide
Clonidine	<b>Anticholinergics</b>	<b>Cardiac glycosides</b>	Amiodarone
Imidazolines	Antihistamines	<b>Potassium</b>	Calcium channel blockers (rare)
<b>Cholinergics</b>	TCA		Beta-blockers (rare)
Organophosphates	Phenothiazines		<b>Propoxyphene</b>
Carbamates	Clozapine		<b>Organophosphate insecticides</b>
<b>Opioids</b>	Atropine		<b>Antimicrobials</b>
<b>Sedative hypnotics</b>	Scopolamine		Amantadine
<b>Magnesium</b>	<b>Thyroid hormone</b>		Azithromycin
	<b>Cellular Asphyxiants</b>		Chloroquine
	<b>Carbon monoxide</b>		Erythromycin
	<b>Drug withdrawal states</b>		Pentamidine
			Quinine
			Quinolones (eg, Ciprofloxacin)
			<b>Arsenic</b>
			<b>Thallium</b>
			<b>Fluoride</b>
			<b>Citrate</b>

Society guideline links: Treatment of acute poisoning caused by specific agents other than drugs of abuse

INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE ED

Table 3. Toxicants that induce hemodynamic changes

<b>Toxicants that induce hemodynamic changes</b>			
<b>Hypertension with tachycardia</b>	<b>Hypertension with bradycardia</b>	<b>Hypotension with tachycardia</b>	<b>Hypotension with bradycardia</b>
<b>Sympathomimetics</b>	<b>Alpha-adrenergic agonists</b>	<b>Beta-adrenergic agonists.</b>	<b>Beta-blockers</b>
Amphetamines	Phenylpropanolamine	Theophylline	<b>Calcium channel blockers</b>
Cocaine	Phenylephrine	Albuterol	<b>Cardiac glycosides</b>
Ephedrine	Phentermine	Isoproterenol	Digoxin
Pseudoephedrine	<b>Ergot alkaloids</b>	Terbutaline	Digitalis purpurea
Theophylline	<b>Sumatriptan</b>	Caffeine	Oleander
Caffeine	<b>Clonidine (early)</b>	Disulfiram reaction (delayed)	Hemlock
Methylphenidate	<b>Guanfacine</b>	<b>Toxic alcohols</b>	Bufotenin/serotonin
Cat (catinoids)	<b>Imidazolines</b>	Isopropyl alcohol	<b>Clonidine</b>
<b>Anticholinergics</b>	Tetrahydrozoline	<b>Carbon monoxide</b>	<b>Alpha-methyldopa</b>
Antihistamines	Oxymetazoline	<b>Alpha-adrenergic antagonists</b>	<b>Cyanide</b>
Tricyclic antidepressants (early)	<b>Cholinergic agents</b>	Doxazocin	<b>Carbon monoxide (late)</b>
Phenothiazines (some)	Organophosphates	Hydralazine	<b>Opioids</b>
Antiparkinsonian agents	Carbamates	Tricyclic antidepressants	<b>Sedative hypnotics</b>
Muscle relaxants	<b>Steroid hormones</b>	<b>Heavy metals (acute)</b>	Barbiturates
Clozapine	Glucocorticoids	Iron	Benzodiazepines
<b>Central hallucinogens</b>	Mineralocorticoids	Arsenic	<b>Cholinergics</b>
Designer Amphetamines	Estrogen	<b>Colchicina</b>	Organophosphates
Lysergic acid diethylamide (LSD)	Progesterone	<b>Nitrates</b>	Carbamates
Phencyclidine (PCP)	Androgens	<b>Sodium nitroprusside</b>	<b>Antiarrhythmics</b>
Synthetic cannabinoids	<b>Yohimbine</b>		
<b>Poisonings</b>	<b>Heavy metals</b>		
Black Widow Spider Bite	Lead		
Scorpion stings	<b>Disulfiram reaction (early)</b>		
<b>Drug withdrawal states</b>			
<b>MAOIs (tyramine-containing foods)</b>			
<b>Nicotine</b>			
<b>Cholinergic agents (sometimes)</b>			
Organophosphates			
Carbamates			
<b>Thyroid hormone</b>			

Society guideline links: Treatment of acute poisoning caused by specific agents other than drugs of abuse

INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE ED

Table 4. Toxics that alter thermoregulation

Toxins that alter thermoregulation	
HYPERTHERMIA	HYPOTHERMIA
<b>Hyperactivity / muscle stiffness</b>	Opioids
<b>Sympathomimetics</b>	<b>Sedative hypnotics</b>
Cocaine	Benzodiazepines
Amphetamines	Barbiturates
Phenylpropanolamine	Alcohols
Ephedrine	<b>Sympatholytics</b>
Cat Derivatives	Beta-blockers
<b>Imidazolines</b>	Clonidine
<b>Anticholinergics</b>	Alpha-adrenergic antagonists
<b>Drug withdrawal states</b>	<b>Hypoglycemic agents</b>
<b>Lithium</b>	<b>Antipsychotics</b>
<b>Central hallucinogens</b>	<b>General anesthetic agents</b>
Phencyclidine	<b>Carbon monoxide</b>
Lysergic acid diethylamide (LSD)	<b>Drugs that cause flaccid coma</b>
Designer Amphetamines (MDMA, MDEA)	
Synthetic cannabinoids	
<b>Medications that cause seizures</b>	
Isoniazid	
Theophylline	
Strychnine	
<b>Neuroleptic malignant syndrome</b>	
<b>Serotonin syndrome</b>	
<b>MAO inhibitors</b>	
<b>Malignant hyperthermia</b>	
<b>Deteriorated heat dissipation</b>	<b>Increased metabolic rate</b>
Altered sweating	<b>Uncoupled oxidative phosphorylation</b>
Anticholinergic agents	Salicylates
Antihistamines	Dinitrophenol, pentachlorophenol
Phenothiazines	<b>Thyroid hormone</b>
Tricyclic antidepressants	

Society guideline links: Treatment of acute poisoning caused by specific agents other than drugs of abuse

INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE ED

Table 5 Antidotes

ANTIDOTE	TOXIC
Atropine	Organophosphorus pesticides, and substances cholinergic (Physiostigmine, Neostigmine)
Methylene blue	In methemoglobinemia
Bicarbonate	Tricyclic antidepressants
Biperidene	Levomopromaxine, Butyrophenones, Metoclopramide
Calcium	Calcium antagonists
Desferroxamine	Iron intoxication
Ethanol	Methanol, Ethylene Glycol
Physostigmine	Anticholinergics
Flumazenil	Benzodiazepines
Fomepizol	Ethylene glycols (antifreeze)
FAB Fragments	Digoxin
Glucagon	Insulin and $\beta$ -blockers
Glucose	Hypoglycemia (from insulin or ADOS)
N-Acetylcysteine	Paracetamol
Naloxone	Opioids
Sodium nitrite	Cyanide
100% O <sub>2</sub>	CO poisoning
Penicillamine	Heavy metals (copper, mercury, zinc)
Pyridoxine	Isoniazid
Protamine	Heparin
Vitamin K	Oral anticoagulants

Source: Azkunaga B, Mintegi S, Salmón N, Acedo Y, Del Arco L. Poisonings in children under 7 years of age in Spain. Aspects for improvement in prevention and treatment. An Pediatrics. June 1, 2013;78(6):355-60.

## BIBLIOGRAPHIC REFERENCES

---

- Arroyo, A., Rodrigo, C., & Teresa Marrón, M. (2014). Toxicologic evaluation of the minor. *Clinical Medicine*, 142, 43-46. [https://doi.org/10.1016/S0025-7753\(14\)70071-5](https://doi.org/10.1016/S0025-7753(14)70071-5).
- Azkunaga, B, Mintegi, S., Salmón, N., Acedo, Y., & Del Arco, L. (2013). Poisonings in children under 7 years of age in Spain. Aspects of improvement in prevention and treatment. *Anales de Pediatría*, 78(6), 355-360. <https://doi.org/10.1016/j.anpedi.2012.09.016>.
- Azkunaga, Beatriz, Mintegi, S., Bizkarra, I., Fernández, J., & of the Spanish Society of Pediatric Emergencies, I. W. G. (2011). Toxicology surveillance system of the Spanish Society of Paediatric Emergencies: first-year analysis. *European Journal of Emergency Medicine: Official Journal of the European Society for Emergency Medicine*, 18(5), 285-287. <https://doi.org/10.1097/MEJ.0b013e3283462504>
- Bhaskaran, J., Johnson, E., Bolton, J. M., Randall, J. R., Mota, N., Katz, C., ... Sareen, J. (2015). Population trends in substances used in deliberate self-poisoning leading to intensive care unit admissions from 2000 to 2010. *The Journal of Clinical Psychiatry*, 76(12), e1583-1589. <https://doi.org/10.4088/JCP.14m09568>.
- García-Algar, Ó., Cuadrado González, A., & Falcon, M. (2016). Utility of toxicological screening in pediatrics. *Anales de Pediatría*, 85(3), 160.e1--160.e4. <https://doi.org/10.1016/j.anpedi.2015.07.036>.
- Lapus, R. M., Slattery, A. P., & King, W. D. (2010). Effects on a Poison Center's (PC) triage and follow-up after implementing the no Ipecac use policy. *Journal of Medical Toxicology: Official Journal of the American College of Medical Toxicology*, 6(2), 122-125. <https://doi.org/10.1007/s13181-010-0066-x>.
- Martínez-Sánchez, L., Ferrés-Padró, V., Martínez-Millán, D., Fernández-Calabria, C., Amigó-Tadín, M., Jiménez-Fàbrega, F. X., & Nogué-Xarau, S. (2020). Emergency prehospital care of toxic-exposed pediatric patients: epidemiological-clinical characteristics and evaluation of quality of care. *Anales de Pediatría*, 92(1), 37-45. <https://doi.org/10.1016/j.anpedi.2019.03.005>
- Mintegi, S., Esparza, M. J., González, J. C., Rubio, B., Sánchez, F., Vila, J. J., ... Benítez, M. T. (2015). Recommendations on the prevention of poisoning. *Annals of Pediatrics*, 83(6), 440.e1--440.e5. <https://doi.org/10.1016/j.anpedi.2015.01.003>.
- Society guideline links: Treatment of acute poisoning caused by specific agents other than drugs of abuse - UpToDate.* (n.d.). Retrieved from [https://www.uptodate.com/contents/society-guideline-links-treatment-of-acute-poisoning-caused-by-specific-agents-other-than-drugs-of-abuse?search=intoxicacion-pediatrics&topicRef=6496&source=see\\_link](https://www.uptodate.com/contents/society-guideline-links-treatment-of-acute-poisoning-caused-by-specific-agents-other-than-drugs-of-abuse?search=intoxicacion-pediatrics&topicRef=6496&source=see_link)
- Zubiaur, O., Salazar, J., Azkunaga, B., & Mintegi, S. (2015). Psychotropic drug ingestion: most frequent cause of unintentional pediatric poisonings in Spain. *Anales de Pediatría*, 83(4), 244-247. <https://doi.org/10.1016/j.anpedi.2014.12.017>.

## INTOXICATIONS IN PAEDIATRICS AND THEIR MANAGEMENT IN THE ED

### RINSAD

The Journal Childhood and Health (RINSAD), ISSN: 2695-2785, arises from the collaboration between administrations Portugal, Galicia, Castilla y León, Extremadura and Andalusia within the [InterregSpain-Portugal RISCAR](#) project and aims to disseminate scientific articles related to child health, providing researchers and professionals in the field a scientific basis where to know the progress in their respective fields.

The RISCAR project is co-financed by the European Regional Development Fund (ERDF) through the Interreg V-A Spain-Portugal Programme (POCTEP) 2014-2020, with a total budget of 649,699 €.

Magazine fruit of the [InterregSpain - Portugal RISCAR](#) project with the [University of Cadiz](#) and the [Nursing and Physiotherapy Department of the University of Cadiz](#).

The works published in RINSAD magazine are licensed under [Creative Commons Attribution-NonCommercial-ShareAlike4.0 International](#).