



STANDARDS FOR NURSING CARE TO CHILDREN INTOXICATED BY HOUSEHOLD CLEANERS

PADRÕES PARA ASSISTÊNCIA DE ENFERMAGEM A CRIANÇAS INTOXICADAS POR DOMISSANITÁRIOS

NORMAS PARA LA ATENCIÓN DE ENFERMERÍA A LOS NIÑOS INTOXICADOS POR LIMPIADORES DOMÉSTICOS

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ABSTRACT

Objective: to present good practice guiding standards in nursing care to children intoxicated by household cleaners. **Method:** study with documentary nature, using narrative review, with literatures of technical-scientific evidence on the subject and protocols of a center for toxicological information in the northwestern region of Paraná. The good practice guiding standards were systematized and described in seven axes. **Results:** the procedures of reception related to family and obedience to ethical and relational aspects of care, primary assessment and measures for life support, nursing history and clinical epidemiological and laboratory anamnesis, decontamination measures, use of antidotes, symptomatic treatment and complementary exams and nursing guidelines for hospital discharge, regarding the structure and care process. **Conclusion:** adapted to the structural conditions and welfare services, this study may contribute to improve the quality of care and a more agile, efficient and complete care to the intoxicated person. **Descriptors:** Care Standard; Child Health; Poisoning; Poison Control Centers; Household Products; Nursing Care.

RESUMO

Objetivo: apresentar padrões orientadores de boas práticas na assistência de enfermagem a crianças intoxicadas por domissanitários. **Método:** estudo de natureza documental. Utilizou-se revisão narrativa, com literaturas de evidências técnico-científicas sobre o tema e protocolos de um centro de informação toxicológica do Noroeste do Paraná. Sistematizaram-se e se descreveram os padrões orientadores de boas práticas em sete eixos. **Resultados:** relacionaram-se os procedimentos para o acolhimento à família e obediência a aspectos éticos e relacionais do atendimento, avaliação primária e medidas de suporte à vida, histórico de enfermagem e anamnese clínica epidemiológica e laboratorial, medidas de descontaminação, uso de antidotos, tratamento sintomático e exames complementares e orientações de enfermagem para alta hospitalar, no tocante à estrutura e ao processo de atendimento. **Conclusão:** espera-se que, adaptado às condições estruturais e assistenciais dos serviços, este estudo possa contribuir para melhorar a qualidade da assistência e para que o atendimento ao intoxicado se torne mais ágil, eficaz e completo. **Descritores:** Padrão de Cuidado; Saúde da Criança; Envenenamento; Centros de Controle de Intoxicações; Produtos Domésticos; Cuidados de Enfermagem.

RESUMEN

Objetivo: presentar normas rectoras de las buenas prácticas en la atención de enfermería a los niños intoxicados por limpiadores domésticos. **Método:** estudio de carácter documental, utilizándose revisión narrativa, con literaturas técnico-científicas sobre el tema y los protocolos de un centro de información toxicológica en la región noroeste de Paraná. Las normas rectoras de la buena práctica fueron sistematizadas y descritas en siete ejes. **Resultados:** los procedimientos para la recepción refieren a la familia y la obediencia a los aspectos relacionales y éticos de la atención primaria, la evaluación y las medidas de apoyo a la vida, la historia de la enfermería y la anamnesis clínica, epidemiológica y de laboratorio las medidas de descontaminación, uso de antidotos, tratamiento sintomático y exámenes complementarios y de enfermería al alta hospitalaria, directrices sobre la estructura y el proceso de cuidados. **Conclusión:** adaptado a las condiciones estructurales y de servicios de bienestar, este estudio puede contribuir a mejorar la calidad de la atención y para un servicio al intoxicado más ágil, eficiente y completa. **Descriptor:** Nivel de Atención; Salud del Niño; Envenenamiento; Centros de Control de Intoxicaciones; Productos Domésticos; Atención de Enfermería.

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INTRODUCTION

First-childhood accidents, between zero and four years old, have been increasingly responsible for infant injuries and deaths in Brazil and in the world, and constitute a serious public health problem.¹⁻⁴

Among accidents in childhood, acute intoxication represents an emerging phenomenon, consisting of a set of toxic or only biochemical signs and symptoms caused by the interaction of a chemical agent with the biological system, i.e., an organic imbalance resulting from accidental or intentional exposure to chemical substances found in the environment, mainly at home or peridomiciliary, such as toxins from plants and animals, pesticides, pharmaceuticals, industrial products and household products.⁵⁻⁷

Intoxication by household products, also called household cleaners, have significant expression in the context of intoxications. There is a direct relationship between the massive diversification of substances and products available to the consumer and the failure to comply with the most basic rules of safety, especially in the rules of packaging and storage.⁸⁻⁹

Annually, Brazilian centers for information and toxicological assistance register approximately 50 thousand new cases of human intoxication, being 3,601 (8.55%) caused by household cleaners and 1,925 cases in children aged less than five years old.¹⁰ In a study analyzing 425 cases of intoxication in the age range between zero and four years, medicines and household cleaners totaled 254 notifications, corresponding to approximately 60% of cases.¹¹

Although the toxicity of these products directly relates to concentration, ingested volume and time of exposure to the product, the magnitude of the problem increases to illegal products for sale without the authorization of the Brazilian Sanitary Surveillance and which have no guarantee as to the outcome and safety during handling or storage.⁹ In Brazilian society, the use of clandestine household cleaners is common due to affordable prices, being this trade responsible for approximately 42% of the market of "liquid bleaches", and 30% and 16% for liquid disinfectants and detergents, respectively.⁸⁻⁹

These intoxications, especially the unintentional ones, are occurrences of great impact in pediatric emergency and urgency care. In some cases, the child immediately responds to the established treatment, but

some of them require intensive and extended care, by the type of the causal agent of intoxication and the circumstances of the exposure, the amount of agent present in the body, by installed systemic repercussions, and the vital characteristics of the child.¹²⁻¹³

The first moments of care for these children suggests the need to direct health professionals' intervention, making relevant the establishment of good practice guiding standards for nursing care. Good practice guiding standards are understood as objective determinations for the care, facilitating the sorting and targeting of assistance and are statements for the quality of care provided by nursing staff, with indicative parameters to evaluate the professional's effectiveness.¹³⁻⁴

OBJECTIVE

- To present good practice guiding standards in nursing care to children intoxicated by household cleaners.

METHOD

This is a study of documentary nature that used the narrative review to prepare good practice guiding standards for nursing care to children intoxicated by household cleaners. In this study, the good practice guiding standards are related to a proposal for technological innovation.¹⁵ Although nursing technology concept is the systematic application of scientific knowledge to facilitate the care process to the human being, techniques with scientific evidence in nursing value the profession.¹⁵

To achieve the proposed objective, the study was developed at a center for toxicological assistance (CIAT - *Centro de Informação e Assistência Toxicológica*) in the northwestern region of Paraná, Brazil, called Intoxication Control Center, Regional University Hospital of Maringá, Paraná State, Brazil (JRC/HUM). The surveyed CIAT is linked to the National Network of Centers for Information and Toxicological Assistance (RENACIAT - *Rede Nacional de Centros de Informação e Assistência Toxicológica*), and is considered sentinel unit for epidemiological surveillance of cases of intoxication by different etiologies and severity levels.¹⁶

For identification of empirical indicators for elaboration of good practice guiding standards for assistance to children intoxicated by household cleaners, a narrative review was conducted with literature of technical-scientific evidence on the subject, theoretical guidelines¹⁶⁻¹⁸ and protocols¹⁹

guiding the assistance prepared by the nursing staff of the JRC/HUM.

The narrative review delineated scientific productions on the subject by means of a retrospective search in electronic databases in the second half of 2015. The accessed databases were *Portal de Periódicos CAPES - CAPES Journal Portal (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Coordination for Higher Level Personnel Improvement)*, SciELO (Scientific Electronic Library Online), LILACS (Latin American and Caribbean Literature in Health Sciences) and MEDLINE (International Literature in Health Sciences), using the combinations of descriptors in Portuguese and English, according to the Health Science Descriptors: standard of care (*padrão de cuidado*); poisoning (*envenenamento*); household products (*produtos domésticos*); and child health (*saúde da criança*).

The selection of the articles based on the following criteria: texts and original articles published in its entirety in national and international documents and journals in the period from 2000 to 2014, available electronically and freely and addressing clinical-epidemiological aspects of childhood intoxications, including clinical manifestations and clinical management of intoxication. The initial result was analyzed and selected, by removing the sample items that did not correspond to scientific research or that were duplicated in the different groups of searched descriptors and in different databases.

In order to develop the research, the study was submitted to the Permanent Human Research Ethics Committee (COPEP- *Comitê Permanente de Ética em Pesquisa Envolvendo Seres Humanos*) of the State University of Maringá (UEM - *Universidade Estadual de Maringá*), approved by opinion 879.455/2014, CAAE 35443114.7.0000.0104/2014 and conducted in accordance with the ethical standards required.

RESULTS

The good practice guiding standards for nursing care were built from seven groups of procedures considered priorities for quality standards/indicators, relating the procedure to be carried out and the respective pattern in relation to the structure and care process: Family welcome and obedience to ethical and relational care aspects (Axis 1), Primary Assessment of vital functions and life support measures (Axis 2), Nursing history and clinical, epidemiological and laboratory

anamnesis (Axis 3), Decontamination measures (Axis 4), Use of antidotes (Axis 5), Symptomatic treatment and complementary exams (Axis 6), and Nursing guidelines for hospital discharge (Axis 7).

Family welcome and obedience to ethical and relational care aspects (Axis 1) included standards regarding privacy, right to information, dignity and courtesy of professionals, right to claim/suggestions, patient safety, nursing records, notification of the occurrence to epidemiological surveillance and compliance with Brazilian legislation of protection to children and adolescents.

Primary assessment and life support measures (Axis 2) aim at stabilizing the patient's vital conditions and consist of performing a series of interventions until the establishment of the definitive diagnosis and the consequent specific treatment, as presented in Figure 1.

Axis	Good Practices Guiding Standards
Primary assessment and life support measures	<p>*Evaluation of the responsiveness and thoracic expansion: if not responsive and without respiratory movement, check the central pulse; if absent pulse, initiate cardiorespiratory arrest protocol; if present pulse, open areas with manual maneuvers (hyperextension of the head and chin elevation) and initiate ventilatory support (respiratory arrest); if not responsive with respiratory movements: ensure airway permeability and ensure ventilatory support; if responsive, continue evaluation.</p> <p>*Evaluation of airway patency and correction of risk situations: hyperextension of the head and chin elevation, before oropharyngeal cannula placement; assess the presence of mucosal, tongue and oropharyngeal lesions.</p> <p>*Evaluation of ventilation: ventilatory patterns, chest symmetry, respiratory rate and consider the administration of oxygen.</p> <p>*Evaluation of circulatory status: presence of external or internal hemorrhages of non-traumatic nature, peripheral or central pulses, capillary filling time, skin, placement and temperature.</p> <p>*Assessment of neurological status: use of neurological assessment scale, pupil photo-reactivity evaluation and symmetry.</p> <p>*Exposure: remove all patient's clothing; observe and investigate signs such as odor of the product ingested in oral cavity and body surface.</p> <p>*Stabilization measures: implementation of measures aimed at correcting disorders that present imminent risk of life; maintain careful patient surveillance and monitor vital data until the patient's clinical improvement; therapeutic procedures.</p>

Figure 1. Good practice guiding standards for nursing care to children intoxicated by household cleaners in the aspects of primary assessment of vital functions and life support measures. Maringá (PR), Brazil, 2016.

As shown in Figure 2, for care process continuity in a hospital environment or units for urgency care, the nursing history was

established, including clinical, epidemiological and laboratory anamnesis (Axis 3).

Axis	Good Practices Guiding Standards
Nursing history and epidemiological and laboratory anamnesis	<p>*Interview: approach the family/patient to assess the causal agent of intoxication, estimated dosage, exposure route, time elapsed and circumstance, procedures performed at the event site and signs and symptoms presented, previous intoxications and associated pathology.</p> <p>*Physical examination: evaluation mainly of the level of consciousness and pupil diameter and oral cavity / oropharynx (corrosive lesions, odor, hydration); use the semiological methodology and perform detailed thoracic auscultation to evaluate the possibility of bronchoaspiration.</p> <p>*Vital signs: assess vital signs meticulously, emphasizing blood pressure and pulse frequency and rhythm; the assessment of vital signs must correspond to the case severity until the patient's clinical improvement.</p> <p>*Collection of biological material: collect the requested biological material according to protocols of collection and storage and forward to analysis.</p>

Figure 2. Good practice guiding standards for nursing care to children intoxicated by household cleaners in the aspects of nursing history and clinical, epidemiological and laboratory anamnesis. Maringá (PR), Brazil, 2016.

The intervention measures considered specific to the treatment of children intoxicated by household cleaners were: decontamination, according to exposure route, use of antidotes and implementation of procedures to treat signs and symptoms of intoxication. Decontamination measures (Axis

4) comprise a set of procedures that are of great importance for reducing or interrupting the absorption of toxic agent. The exposure route shall determine the measures to be adopted, with good practice guiding standards for oral, gastric, respiratory, eye and skin decontamination. (Figure 3)

Axis	Good Practices Guiding Standards
Decontamination measures	<p>*Decontamination of the oral cavity: manual removal of waste from the oral cavity, with the finger wrapped in a clean tissue or latex glove and describe findings.</p> <p>*Gastric decontamination: Do not induce vomiting/emesis due to the risk of bronchoaspiration, do not administer activated charcoal or perform gastric lavage (risk of aspiration and perforation) and do not offer water, milk or any other liquid, since some substances are fat soluble and the liquid can accelerate the absorption of the toxic agent.</p> <p>*Skin decontamination: Strip off clothing, wash abundantly body surface under running water, and cover the place, without pressure, with clean tissue.</p> <p>*Eye decontamination: wash abundantly with saline solution for at least 15 minutes.</p> <p>*Respiratory decontamination: remove the child safely from the contaminated environment to a ventilated place; nebulization with 0.9% pure saline for three to five days. If clothing is contaminated, remove and wash under running water.</p>

Figure 3. Good practice guiding standards for nursing care to children intoxicated by household cleaners for decontamination measures. Maringá (PR), Brazil, 2016.

After decontamination and removal of the toxic agent, good practice guiding standards for nursing care were established for the use of specific and nonspecific antidotes (Axis 5),

and completion of procedures to treat signs and symptoms of intoxication, called symptomatic treatment and complementary exams (Axis 6), as shown in Figure 4.

Axis	Good Practices Guiding Standards
Use of antidotes	<p>*Non-specific antidotes:</p> <ul style="list-style-type: none"> - Contraindicate the use of acidic solutions, citrus juices or diluted vinegar and establish fasting until the treatment is complete. - Activated carbon: indicated only in special situations. - Olive oil acts as a protective film of the mucosa of the gastrointestinal tract in case of intoxications by corrosive products, in which gastric lavage is contraindicated. Oral administration according to gravity, make repeated doses.
Symptomatic treatment and complementary exams	<p>*Pain control: evaluate; administering analgesic medication.</p> <p>*Control of vomiting: observe occurrence; evaluate and administer antiemetic medication and/or serum with electrolytes, when prescribed; position the patient in lateral decubitus, if there is no contraindication (traumas), to avoid aspiration of secretions.</p> <p>*Symptomatic treatment: treat other symptoms such as phonation disorder, inability to tolerate swallowing and intense retrosternal pain.</p> <p>*Laboratory evaluation: follow test results - blood gas, blood count, ionogram, blood glucose, urea and creatinine.</p> <p>*Diagnostic imaging: follow the performance of digestive endoscopy; chest and abdomen x-ray, in case of hematemesis or evidence of perforation, contrast and other tests indicated.</p>

Figure 4. Good practice guiding standards for nursing care to children intoxicated by household cleaners in the use of antidotes, symptomatic treatment and complementary exams. Maringá (PR), Brazil, 2016.

When clinical stabilization occurs for discharge, there is need to assess the existence of family members or caregivers for the discharge guidelines. Figure 5 show good

practice guiding standards of nursing care to intoxicated children in relation to nursing guidelines for hospital discharge (Axis 7).

Axis	Good Practices Guiding Standards
Hospital discharge guidelines	<p>*Continued adherence to treatment: patient and family orientation regarding the need for outpatient follow-up.</p> <p>*Reference to the Family Health Strategy (FHS) team: contact the FHS team in the coverage area of the family housing, for monitoring and classification of family risk.</p> <p>*Promotion of safe home environment: guide family for storage/packaging of products in original and safe packaging and out of reach of children, promoting health education in the hospital environment.</p>

Figure 5. Good practice guiding standards for nursing care to children intoxicated by household cleaners in the aspects of nursing guidelines for hospital discharge. Maringá (PR), Brazil, 2016.

Children who need monitoring for a longer period should be discharged and continue the outpatient follow-up, when indicated. Adapted to the structural and care conditions of health services, the aforementioned good practices guiding standards can contribute to improve the care quality for intoxicated children.

DISCUSSION

The drafting and implementation of good practice guiding standards for nursing care to intoxicated children, depending on the toxic agent, must support the reality of care conditions and interventions and practical actions to prevent damage to the patient, to reduce unsafe acts in care processes to a minimum acceptable level, and in the use of new technologies to promote patient safety, in order to achieve the best possible results. The standardization of definitions and acts is also important to allow valid comparisons of safety measures.^{13,20-21}

The nursing professional should offer a secure childcare and use existing best practices, ensuring the privacy with respect to protection of privacy of patients and their families, maintaining the secrecy and confidentiality of all personal information. Moreover, the citizen has the right to receive information and clarifications by the health team clearly, objectively and respectfully, adapted to his/her cultural condition. The citizen also has the right to know the names of the professionals who work in the health units, in addition to having access to the mechanisms of listening in order to be able to make suggestions, claims and complaints to managers of the units providing services.²²⁻²³

Nursing is a profession strongly dependent of accurate and timely information to perform a wide variety of interventions involved in care. In this way, the nursing records in the patient's medical records are indispensable elements to the care process and, when recorded reflecting the documented reality,

allow the communication between the health team. They reflect all the commitment and strength of the nursing team work, valuing, as well, their actions and the patient safety, promoting a safe environment and preventing and controlling adverse events.^{21,24}

The procedures for notification of the toxicological event with view to the toxicological vigilance must be agile and dynamic, and the communication of the event to the epidemiological surveillance must be compulsory. In the context of the multiprofessional team, the nurse is responsible for providing information to Health Surveillance and Epidemiological Surveillance, which will subsidize the implementation of preventive measures.⁹

In relation to the protection of childhood and adolescence, the Brazilian Byelaw for Children and Adolescents (*Estatuto da Criança e do Adolescente*) has a clear formulation on the role of the health and educational sectors, treating them as privileged public spheres of protection, with the specific tasks of identifying and notifying maltreatment situations, and seek ways (and partners) to protect the victim and support the family. It guides the referrals from health team to ensure that the suspected cases of maltreatment or neglect by the family or caregivers of children and adolescents must be communicated to the Tutelary Council of the respective locality.²⁵

Regarding guiding standards for the care of intoxicated children, the conditions of risk of death must be identified and treated concomitantly, obeying the sequence of priorities²⁶ used by services of pre-hospital care.²⁷⁻²⁸ In the technical aspects of care, each type or group of toxic agent has specific protocols of treatment and measures of prehospital and hospital care, informed by the CIAT, but the earliness and the technical-professional competence to apply these protocols directly relate to their efficacy.¹⁶⁻¹⁹

The acute intoxication is generally an accidental ingestion of one or more substances

in quantities sufficient to interfere in the life support systems of the organism.⁵⁻⁶ The therapeutic conduct in a suspected or confirmed picture of intoxication, as in any other health emergency, requires a fast initial clinical evaluation - with primary assessment of vital functions and of life support measures - to identify and correct situations of imminent risk of death.¹⁵⁻¹⁹

After the clinical stabilization of the child, signs and symptoms of intoxication need to be evaluated to establish the toxic syndrome, allowing more rapid identification of the causal agent and the implementation of appropriate treatment. To do so, a thorough anamnesis and physical examination is necessary. From this stage, CIAT should be consulted to obtain appropriate guidelines.^{13,29}

The decontamination measures comprise a set of procedures that are of great importance to reduce or interrupt the absorption of the toxic agent. This stage seeks to reduce the exposure of the organism to the agent, either by reducing the time and/or contact surface or the amount of the agent in contact with the body, in an attempt to prevent the development of intoxication. However, in practice, its effectiveness is limited by a number of factors, especially the time of institution of procedures.^{6,17,30} Although gastric lavage, considered the method of decontamination and with the purpose of decreasing the absorption of the agent, is widely used at emergency units, is not indicated for all agents of contamination, such as household cleaners, for its great risk of aspiration and perforation when inserting the probe.^{15,17,30}

In relation to the use of antidotes, the specific ones act in cases of intoxication caused by certain chemical substance or a certain group of chemical substances, and the nonspecific ones, when modifying toxicokinetics or toxicodynamics of chemical agents of diverse groups.^{17,30} Specifically in intoxication with household cleaners, which do not have a specific antidote, the extra virgin olive oil is used as a nonspecific antidote. The olive oil acts forming a protective film of the mucosa of the gastrointestinal tract in case of intoxication by corrosive products, in which the gastric lavage is contraindicated.^{18-19,30}

The nursing team should evaluate the intensity of the pain by means of scale according to age and routine of the institution, and administer the medication according to the medical prescription, checking the time and registering, in writing, on the nursing notes the administration of

medication and intercurrent/measures adopted for pain relief, in an appropriate format and in chronological order. The team should also place the child in the lateral decubitus position, if there is no contraindication (trauma), in order to avoid the aspiration of secretions.^{17,24}

The complementary exams are essential for clinical assessment of intoxicated children and can provide important information regarding diagnosis and clinical evolution of intoxication, as well as guide the research for a specific toxicological analysis. When there is evidence of moderate or severe toxicity in intoxications that present potential for systemic toxicity and in exposures to unknown substances, routine or specific laboratory examinations of the toxic substances involved may be necessary.¹⁷⁻¹⁹

When the clinical picture improves and evolves to hospital discharge, it is necessary to confirm the existence of family members or caregivers for the guidelines. At the discharge, guidelines for preventing intoxications in the home environment are extremely important. The residence can be especially unsafe for children, because it contains hazardous objects and materials in all rooms, as sharp instruments, furniture, windows, pans with steaming food, matches, medicines, detergents and other toxic products, which are special attractions for children and, the younger the child, the greater the incidence of these episodes.²⁻³

Prevention is of paramount importance for decreasing the occurrence of new episodes of child intoxication. The family should receive basic guidelines, such as keeping household cleaners, cosmetics, medicines, toxic plants and pesticides in high, secure and closed places, out of reach of the eyes and hands of children, emphasizing that, in case of intoxication, they should not perform any procedure on the child, but seek information at centers for information and toxicological assistance, pass them on to other caregivers of children and seek care at the nearest health service.^{3,13}

One of the limitations of this study was the absence of documents and references with health and nursing evidence focused on initial care for intoxicated children. In terms of advancement to scientific knowledge, the presented care standardization, in addition to standardizing nursing practice, fulfilling precepts of Professional Exercise, can contribute to improve the implementation of activities of the care program at centers for information and toxicological assistance.

CONCLUSION

This study presented the good practice guiding standards for nursing care to children intoxicated by household cleaners, structured from groups of procedures considered quality indicating axes, relating the procedure to be carried out and the respective pattern in relation to the structure and care process. The development of standards proposed in this work are an essential resource to guide nurses in care planning. The existence of protocols that subsidize the assistance to intoxicated children is also important for improving the care quality, which may contribute to a more agile, efficient and complete care to the intoxicated person, as they present a logical sequence and standards for the service, and for promoting new forms of intervention with the child and the family.

Nevertheless, the process of construction of the presented good practice guiding standards does not finish this study because this instrument should be submitted to clinical validation, in order to test, in a large number of customers, their viability and operability. Therefore, further studies should be developed to build, validate and test instruments that support care actions in the toxicological assistance field.

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