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Research Article

Nursing Administration in the Management of Poisoning Cases: A Review of Clinical and Organizational Practices

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Abstract:

Nursing administration plays a pivotal role in the management of poisoning cases, particularly in ensuring that clinical practices align with organizational protocols. Effective nursing leadership fosters an environment conducive to rapid assessment and intervention, critical components in addressing poisoning incidents. In this context, nurses are not only tasked with immediate patient care but also with the implementation of evidence-based practices and guidelines. The importance of timely assessment and triaging in the emergency setting is underscored, as these initial steps can significantly influence patient outcomes. Additionally, the role of nursing administration encompasses the training and preparedness of nursing staff, equipping them with the necessary knowledge to handle a diverse array of poisoning scenarios, including chemical, biological, and pharmaceutical cases. Furthermore, nursing administration is integral in creating an organizational culture that prioritizes continuous education and interdisciplinary collaboration in poison management. Ensuring that nursing teams are well-versed in the latest research, technologies, and treatment protocols is essential for the optimal management of poisoning cases. Organizational frameworks that facilitate communication between healthcare providers, emergency response units, and poison control centers enhance the overall efficacy of care delivered. Strategies such as simulation-based training, interdisciplinary team drills, and regular reviews of case outcomes contribute to refining best practices. In summarizing these clinical and organizational dynamics, nursing administration stands as a critical component in mitigating the impact of poisoning incidents, ensuring better preparedness, response, and recovery.

1. Introduction

The management of poisoning cases represents one of the most dynamic, high-acuity, and complex challenges within modern healthcare systems. These presentations, which can range from accidental pediatric ingestions to intentional adult overdoses, occupational and environmental exposures, or deliberate acts of chemical terrorism, demand a response that is simultaneously rapid, precise, and seamlessly multidisciplinary. Within this high-stakes environment, the clinical expertise of emergency physicians, intensivists, and clinical toxicologists is undeniably central to diagnostic and therapeutic decision-making. However, the efficacy, safety, and reliability of the entire response system—from initial triage to definitive treatment and follow-up—are fundamentally orchestrated, sustained, and optimized by robust nursing administration. [1]

Nursing administrators in this specialized sphere operate at the strategic confluence of direct patient care protocols, departmental logistics, staff competency development, inter-departmental collaboration, and ethical resource stewardship. Their purview extends from the critical moment a poisoned patient arrives at the emergency department (ED), through the perilous stages of resuscitation and intensive care, onto medical or psychiatric wards for recovery, and even into the domains of community follow-up, rehabilitation, and primary prevention initiatives. Their work ensures that the right knowledge, tools, processes, and people are aligned at the right time, a non-negotiable requirement in toxicology where time to intervention is often the most decisive prognostic factor [2].

The scope of poisoning confronting healthcare systems is vast and heterogenous, encompassing a dizzying array of agents: pharmaceutical overdoses (from common analgesics to cardiovascular and psychotropic drugs), household and industrial chemical exposures, envenomations, heavy metal toxicities, foodborne toxins, and inhalation injuries. Each category possesses unique pathophysiological pathways, clinical toxidromes, and management strategies, demanding specific knowledge and resources [1]. This immense variability precludes any simplistic, one-size-fits-all clinical or administrative approach. Instead, it necessitates the development of a highly adaptable, yet rigorously standardized, system—a paradox that skilled nursing leadership is uniquely equipped to resolve. Administrators must design frameworks that are flexible enough to manage the unknown ingestion of a child as effectively as the mass exposure from an industrial accident, yet standardized enough to ensure consistency, safety, and adherence to evidence-based protocols. This challenge is further compounded by the rapidly evolving landscape of toxicological threats. Evolving patterns of substance abuse, such as the opioid epidemic marked by synthetic variants like fentanyl and its analogues, the relentless proliferation of novel psychoactive substances (“designer drugs”) designed to circumvent legal statutes, and the persistent threat of mass casualty incidents involving chemical agents all demand a system

capable of continuous adaptation and learning [2, 3]. In this context of diversity and flux, the administrative function of nursing transcends traditional, static bureaucratic roles; it becomes a dynamic clinical force multiplier. Effective administration amplifies the impact of frontline clinicians by removing obstacles, anticipating needs, and creating an environment where expert care can be delivered efficiently and safely.

The clinical imperative in poisoning is unambiguous: to mitigate toxicity, support organ function, and administer specific antidotes when they exist. Yet, the pathway to achieving these goals is fraught with systemic hurdles. The initial presentation is often shrouded in uncertainty, with an unknown substance, an unreliable history, and a patient who may be unconscious, agitated, or uncooperative. This diagnostic ambiguity places an extraordinary burden on the initial point of contact, typically nursing staff, who must initiate empiric, life-supporting measures while simultaneously coordinating the complex investigative puzzle. The required resources—from specialized antidotes and advanced life support equipment to modalities for enhanced elimination like hemodialysis—are often expensive, perishable, and needed urgently but infrequently. The coordination of care across multiple specialties—emergency medicine, critical care, nephrology, psychiatry, clinical toxicology, pharmacy, and laboratory services—must be flawless to avoid dangerous gaps or delays [4]. It is precisely at these intersections of uncertainty, urgency, and complexity that nursing administration proves its indispensable value. It is the function that ensures triage protocols are scientifically sound and user-friendly, that antidote stocks are available and rotated, that staff are trained not just for common scenarios but for rare crises, and that communication channels between departments are open and effective.

2. The Clinical Landscape of Poisoning:

Understanding the administrative needs begins with grasping the clinical problem. Poisoning accounts for a significant proportion of emergency department visits and intensive care unit admissions globally. Patterns vary by region, age group, and socioeconomic factors, with opioid overdoses constituting a public health crisis in many nations, while pesticide ingestion remains a leading method of suicide in agricultural communities [1, 2]. Pediatric exposures are frequently unintentional and involve household products or medications, whereas adult cases often involve intentional self-harm, recreational drug use, or occupational accidents. This epidemiological diversity requires nursing administrators to ensure that protocols and training are sufficiently broad yet capable of prioritizing the most prevalent local threats. The initial challenge in any poisoning case is the frequent lack of a clear history. Patients may be unconscious, confused, uncooperative, or unaware of the substance involved. This ambiguity places an immense burden on the triage and frontline nursing staff, who must initiate empiric stabilizing measures while coordinating the diagnostic puzzle. The clinical presentation can mimic other medical conditions, such as stroke, sepsis, or metabolic disorders, necessitating a high index of suspicion and systematic assessment. Nursing administrators are responsible for creating and validating the triage algorithms and clinical assessment tools that guide this critical first step, ensuring they are evidence-based, rapidly executable, and integrated into the electronic health record for consistent application [5].

The pathophysiological effects of poisons are protean, potentially affecting every organ system. Central nervous system depression or excitation, cardiovascular collapse or arrhythmia, respiratory failure, metabolic acidosis, and hepatic or renal injury are common sequalae. Therefore, the clinical response must be prepared to support multiple organ systems simultaneously. This requires not only advanced clinical skills but also immediate access to a suite of resources: advanced airway equipment, ventilator support, vasoactive medications, antidotes, and modalities for enhanced elimination like hemodialysis. The nursing administrator's role is to guarantee the operational readiness of these resources. This involves intricate logistics: maintaining stocks of often expensive and rarely used antidotes (e.g., cyanide kits, digoxin immune Fab), ensuring equipment functionality through regular checks, and establishing clear, authorized pathways for rapid procurement from hospital pharmacies or regional stockpiles in crisis situations [4]. The absence of a key antidote due to an inventory failure is an administrative shortfall with direct, catastrophic clinical consequences.

3. Triage and Initial Stabilization:

The first minutes of managing a poisoned patient are governed by the principles of Advanced Cardiac Life Support (ACLS) and Advanced Trauma Life Support (ATLS), with a toxicological overlay. The primary survey—Airway, Breathing, Circulation, Disability (neurological status), and Exposure/Environment—is the universal starting point. Nursing administration must ensure that every nurse in emergency and acute care settings is not only proficient in these basics but also trained

in their specific application to poisoned patients. For instance, airway management in a patient with a depressed gag reflex from opioids differs subtly from that in a patient with corrosive ingestion causing upper airway edema. Protocol development here is key. Administrators oversee the creation and regular updating of standing orders for nursing interventions in suspected poisoning. These may include administering high-flow oxygen, establishing intravenous access with large-bore catheters, initiating continuous cardiac monitoring, obtaining point-of-care glucose and acetaminophen levels, and preparing for administration of reversal agents like naloxone under specific clinical criteria [5].

Naloxone administration programs are a prime example of nursing-led protocol expansion. In many jurisdictions, nursing administrators have been instrumental in developing protocols that allow nurses in pre-hospital settings and EDs to administer naloxone autonomously based on assessment of respiratory depression, drastically reducing time to treatment for opioid overdoses [6]. Furthermore, the delegation of antidote administration, from activated charcoal to specific reversal agents, must be clearly defined in policies that balance speed of intervention with patient safety. Nursing administrators work with medical toxicologists, pharmacists, and risk management to delineate these scopes of practice. Another critical aspect of initial stabilization is decontamination. For dermal or ocular exposures, immediate irrigation is paramount. Nursing administrators ensure that decontamination stations—with appropriate showers, eye-wash stations, and personal protective equipment (PPE) for staff—are clearly identified, fully functional, and that staff are drilled in their use to prevent secondary contamination, a serious risk in chemical exposures [7]. The organizational foresight to have these systems in place is a non-clinical action that has direct clinical impact.

4. Diagnostic Coordination and Information Management

Once the patient is stabilized, the focus shifts to identification of the toxin and assessment of its severity. Nursing administration plays a central role in streamlining this diagnostic odyssey. This involves managing the complex interplay between nursing assessment, laboratory services, and radiology. Key diagnostic tools include comprehensive urine and serum toxicology screens, quantitative drug levels (e.g., for acetaminophen, salicylates, lithium, digoxin), arterial blood gases, electrolytes, and osmolarity. Nursing administrators must work with laboratory managers to establish toxicology testing as a priority service, understand turnaround times, and ensure clear communication pathways for critical results [8]. They develop systems—often within the EHR—for efficient ordering, specimen labeling, and tracking of these time-sensitive tests.

Perhaps equally important is the coordination of historical information. The nurse is often the primary gatherer of collateral history from family, friends, paramedics, or the patient's belongings. Nursing administrators can implement tools and training to enhance this process, such as standardized history-taking forms that prompt for specific information: pill bottles found, patient's hobbies (e.g., model building with glues), occupational exposures, or recent psychiatric history. In cases of unknown poisoning, coordinating access to regional poison control centers (PCCs) is vital. Nursing leadership ensures that contact information for the PCC is ubiquitously available and that staff are trained and encouraged to utilize this expert consultation service without bureaucratic delay [9]. The advice from a PCC toxicologist can dramatically alter management, and the nurse is typically the conduit for this information. Administrators can facilitate this by integrating PCC consultation into standard order sets and by championing a culture that values external expertise. Furthermore, they oversee the documentation of all assessments, interventions, and communications, ensuring it is thorough, timely, and legally sound, as poisoning cases often involve forensic or medico-legal considerations.

5. From Antidotes to Enhanced Elimination

The core of specific poisoning management often hinges on timely administration of antidotes and, in severe cases, techniques for enhanced elimination of the toxin. Nursing administration is the engine that makes these therapies possible. The first challenge is the pharmacy inventory. Antidotes are famously "expensive to stock and costly to miss" [10]. Nursing administrators, in collaboration with pharmacy directors, must perform rigorous risk assessments to determine which antidotes to stock locally based on local poisoning epidemiology, hospital capabilities, and proximity to other stocked facilities. They establish par levels, monitor expiration dates, and create robust re-ordering systems. For ultra-rare antidotes, they may develop agreements with regional stockpiles or other hospitals, with clear protocols for emergency retrieval.

Beyond availability, the safe administration of antidotes requires detailed protocols. Many

antidotes, such as fomepizole for methanol or ethylene glycol, or N-acetylcysteine for acetaminophen, have complex dosing regimens based on weight and serum levels. Nursing administrators ensure that these protocols are converted into clear, accessible dosing charts or electronic calculator tools within the medication administration system to prevent calculation errors [11]. They also mandate specific monitoring parameters; for example, patients on N-acetylcysteine require monitoring for anaphylactoid reactions, while those receiving digoxin immune Fab need monitoring for reversal of both toxic and therapeutic effects of digoxin. The administration of chelating agents for heavy metal poisoning (e.g., succimer, EDTA) requires careful coordination of blood lead levels and renal function tests. Nursing leadership designs the flowsheets and documentation tools that guide nurses through this intricate monitoring process.

For critically ill patients, enhanced elimination techniques like multiple-dose activated charcoal (MDAC), urinary alkalinization, or extracorporeal treatments (e.g., hemodialysis, hemoperfusion) may be indicated. Nursing administration's role is to ensure the hospital has the capacity and trained personnel to deliver these therapies. This may involve cross-departmental agreements; for instance, a patient requiring hemodialysis for lithium toxicity needs seamless coordination between the ICU, nephrology, and the dialysis unit. Nursing administrators from these units must collaborate to create joint protocols defining patient transfer, responsibility for the procedure during dialysis, and monitoring parameters pre-, intra-, and post-treatment [12]. The logistical planning for these interventions, ensuring the right equipment and specially trained nurses are available 24/7, is a fundamental administrative task that directly determines whether a life-saving therapy can be delivered.

6. Staff Education, Competency, and Resilience Building

The high-stakes, low-frequency nature of severe poisoning cases presents a unique challenge for maintaining staff competency. A nurse may encounter a life-threatening calcium channel blocker overdose only once every few years, yet must perform flawlessly when it occurs. Nursing administration is fundamentally responsible for closing this preparedness gap through targeted, continuous education. This goes beyond mandatory ACLS recertification. It requires the development of a specialized toxicology education curriculum. This can include annual skills fairs with simulation stations for antidote preparation, decontamination drills, and case-based learning modules on common and critical poisoning scenarios [13]. Simulation training is particularly valuable, allowing multidisciplinary teams to practice the management of a crashing poisoned patient in a risk-free environment, testing both clinical knowledge and communication pathways.

Nursing administrators must also foster relationships with experts to provide this education. This involves partnering with clinical toxicologists, pharmacists with toxicology specialization, and regional poison control centers to provide grand rounds, in-service trainings, and just-in-time learning resources. Furthermore, they are tasked with creating and maintaining accessible reference materials, such as toxicology quick-reference handbooks, antidote dosing guides posted in crash carts and medication rooms, and electronic decision support tools integrated into the EHR [14]. Competency assessment is equally important. Administrators must establish metrics to evaluate whether nurses can correctly identify signs of specific toxidromes (e.g., anticholinergic, cholinergic, sympathomimetic, opioid), initiate appropriate protocols, and safely administer high-alert medications like vasopressors and antidotes.

Equally critical is attending to staff resilience. Managing poisoning cases, particularly those involving suicide attempts, pediatric fatalities, or mass casualties, is emotionally taxing. Repeated exposure to such events can lead to burnout, compassion fatigue, and moral distress. Proactive nursing administration creates support structures such as formal critical incident stress debriefings (CISD), access to employee assistance programs, and fostering a unit culture where discussing emotional impact is encouraged, not stigmatized [15]. By investing in the psychological well-being of staff, administrators protect the most valuable asset in the healthcare system and ensure sustained, high-quality care.

7. Organizational Systems and Interdepartmental Collaboration

No clinical unit operates in isolation, and this is especially true for poisoning management, which is a quintessential multi-departmental endeavor. Effective nursing administration acts as the connective tissue binding these disparate units into a coherent system. The most immediate collaboration is between the Emergency Department and the Intensive Care Unit. Nursing administrators from both departments must work together to create smooth, standardized handoff procedures (e.g., using SBAR—Situation,

Background, Assessment, Recommendation) that ensure continuity of care for critically ill poisoned patients during transfer [16]. This includes transfer of all relevant information: toxin suspected, treatments given, monitoring parameters, and plan for ongoing care.

Collaboration with the Pharmacy Department is non-negotiable. Joint committees involving nursing and pharmacy leadership are essential for managing the antidote formulary, developing standardized concentrations for high-risk infusions used in poisoning (e.g., insulin-euglycemia therapy for calcium channel blocker overdose), and implementing safety checks for high-alert medications [17]. With the Laboratory Department, nursing administrators negotiate rapid turnaround times for critical tests and establish panic value notification protocols that ensure a critically high acetaminophen or potassium level reaches the bedside nurse immediately, not after a delay.

For patients whose poisoning is related to self-harm or substance use disorders, collaboration with Psychiatry and Social Work services is vital. Nursing administration must help develop clear protocols for psychiatric evaluation in the ED, establish criteria for admission to medical versus psychiatric units, and create safe procedures for observing patients at high risk of further self-harm, which may involve one-to-one sitter protocols or the use of secure rooms [18]. Furthermore, for patients recovering from substance use, connecting them with outpatient resources and follow-up is a key part of care that requires coordination with community health partners—a role often facilitated by nursing case managers under administrative direction. Finally, in an era of preparedness for chemical, biological, radiological, and nuclear (CBRN) incidents, nursing administration is integral to hospital-wide disaster planning. They lead the nursing component of drills for mass poisoning events, ensuring plans for rapid triage, decontamination, surge capacity, and allocation of scarce resources like ventilators and antidotes are understood and executable [19].

8. Quality Improvement, Risk Management, and Ethical Considerations

A robust system for poisoning care must be underpinned by a culture of continuous quality improvement (QI) and vigilant risk management, both domains heavily influenced by nursing administration. Quality metrics must be established and monitored. These can include process measures such as time to administration of key antidotes (e.g., naloxone for opioid overdose, N-acetylcysteine for acetaminophen), compliance with decontamination protocols, or completeness of toxicology screening in appropriate cases [20]. Outcome measures might involve rates of complications (e.g., aspiration pneumonia after gastric lavage), length of stay in ICU, or mortality rates for specific poisoning types. Nursing leaders analyze this data, often through regular morbidity and mortality conferences or dedicated QI committees, to identify system failures—be they in training, equipment, protocol, or communication—and to implement corrective actions.

Risk management is closely linked. Poisoning cases are rife with potential liabilities: errors in medication administration (especially with complex antidote dosing), failure to diagnose or monitor appropriately, inadequate documentation, or breaches in patient safety (e.g., allowing a suicidal patient to elope). Nursing administrators work with risk managers to develop fail-safes, such as independent double-checks for high-risk antidotes, standardized assessment tools for suicide risk, and secure procedures for handling patient belongings that may contain toxins [21]. They also ensure thorough, objective documentation is a priority, as medical records are often scrutinized in cases of intentional overdose or iatrogenic harm.

Ethical dilemmas are commonplace. The most frequent involves the care of patients who have intentionally poisoned themselves and who may refuse life-saving treatment. Nursing administrators must ensure staff are trained in the legal and ethical frameworks governing capacity assessment, informed consent, and involuntary treatment under mental health legislation [22]. Other dilemmas arise in resource allocation during mass poisoning events or in the prolonged, resource-intensive support of patients with severe poisoning and poor prognoses (e.g., massive acetaminophen overdose with fulminant hepatic failure). Nursing leadership is crucial in facilitating ethics consultations, supporting staff through morally distressing situations, and helping to develop institutional policies that provide ethical guidance for these challenging scenarios.

9. Innovations and Future Directions in Toxicological Nursing Administration

The field is not static, and forward-thinking nursing administration is key to integrating innovations that improve care. Teletoxicology is an expanding frontier. The use of telemedicine platforms to connect bedside nurses in remote or underserved hospitals directly with clinical toxicologists at regional poison centers or academic hubs can dramatically improve care quality [23]. Nursing administrators are tasked with implementing this

technology, training staff in its use, and integrating teletoxicology consultations into standard workflows. Another area is the use of advanced pharmacokinetic modeling software. These programs can predict serum concentration curves for drugs like lithium or phenobarbital based on initial levels and help guide the need for and duration of enhanced elimination therapies. Nursing leaders can champion the adoption of such decision-support tools and ensure nurses are trained to interpret their outputs [24].

Pharmacogenomics is beginning to touch toxicology. Understanding a patient's genetic makeup might explain unusual sensitivities to certain drugs or predict the efficacy of specific treatments. Nursing administration will need to prepare the nursing workforce for this shift, ensuring an understanding of basic principles and the ability to coordinate genetic testing when it becomes clinically relevant in poisoning [25]. Furthermore, the ongoing opioid epidemic has spurred community-facing administrative initiatives. Nurse administrators are often at the helm of programs to distribute take-home naloxone kits to at-risk patients and their families, providing the necessary education for its use [26]. They also advocate for and help design medication take-back programs and public education campaigns on safe medication storage to prevent pediatric ingestions.

Finally, data analytics and artificial intelligence (AI) hold promise. Nursing administrators can leverage hospital data to identify poisoning trends, predict periods of high demand (e.g., holidays linked to increases in certain ingestions), and optimize staffing accordingly. AI tools for analyzing clinical notes and laboratory data to automatically flag potential poisoning cases or suggest possible toxins are in development; their successful implementation will require close collaboration between nursing, IT, and clinical informatics leadership [27].

10. Conclusion:

In conclusion, the management of poisoning cases is a profound test of a healthcare system's clinical acumen and organizational cohesion. As this review has detailed, nursing administration is the indispensable catalyst that transforms potential chaos into coordinated, effective care. It operates on multiple, interconnected levels: at the bedside, by ensuring protocols for triage, stabilization, and antidote administration are clear and executable; at the unit level, by guaranteeing resource readiness and staff competency through relentless education and simulation; and at the organizational level, by building the collaborative bridges between emergency medicine, critical care, pharmacy, laboratory, psychiatry, and beyond that are essential for seamless patient journeys.

The role is both proactive and reactive. It involves the quiet, daily work of inventory checks, policy updates, and staff training, as well as the dynamic leadership during a crisis, whether a single cryptic overdose or a mass chemical exposure. The ultimate metric of success for nursing administration in this domain is the translation of its systems and leadership into tangible patient outcomes: reduced time to definitive treatment, decreased complication rates, shorter lengths of stay, and ultimately, lives saved. Furthermore, it encompasses the well-being of the nursing workforce, providing them with the knowledge, tools, and support to perform under extreme pressure. As the nature of toxicological threats continues to evolve, so too must the strategies of nursing leadership. By embracing innovation, fostering a culture of safety and continuous improvement, and maintaining an unwavering focus on the synthesis of clinical excellence and organizational intelligence, nursing administration will continue to be the foundational pillar upon which successful poisoning management is built. The poisoned patient does not merely need a skilled clinician; they need a system, and it is the nursing administrator who architects, maintains, and leads that system to its vital purpose.

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References

1. rent J. Critical care toxicology: diagnosis and management of the critically poisoned patient. New York, NY: Springer Berlin Heidelberg; 2017.
2. Al-Jelaify M, AlHomidah S. The individualized management approach for acute poisoning. Advances in Pharmacological and Pharmaceutical Sciences. 2021;2021:9926682.
3. Adal O, Abebe A. First aid knowledge and practice toward students with epileptic seizure among governmental high school teachers in Addis Ababa, Ethiopia: Cross-sectional study. Epilepsy & Behavior: E&B. 2022;134:108767.
4. Post TW, editor. Common poisoning syndromes (toxidromes). In: UpToDate, (Ed), UpToDate. Waltham, MA: 2014.
5. Anderson M. Initial management of suspected poisoning in children and young people. Paediatrics and Child Health. 2021;31(10):382–387.
6. Grossman E, Messerli FH. High blood pressure. A side effect of drugs, poisons, and food. Archives of Internal Medicine. 1995;155(5):450–460.
7. Weingart SD, Trueger NS, Wong N, Scofi J, Singh N, Rudolph SS. Delayed sequence intubation: a prospective observational study. Annals of Emergency Medicine. 2015;65(4):349–355.
8. Goga R, De Vasconcellos K, Singh D. Acute poisonings presenting to king edward VIII hospital intensive care unit in Durban, South Africa. Southern African Journal of Critical Care. 2021;37(1):10–15.
9. Serpa Neto A, Cardoso SO, Manetta JA, Pereira VG, Esposito DC, Pasqualucci Mde O, et al. Association between use of lung-protective ventilation with lower tidal volumes and clinical outcomes among patients without acute respiratory distress syndrome: a meta-analysis. JAMA. 2012;308(16):1651–1659.
10. Magnuson A, Sedrak MS, Gross CP, Tew WP, Klepin HD, Wildes TM, O'Connor T. Development and validation of a risk tool for predicting severe toxicity in older adults receiving chemotherapy for early-stage breast cancer. Journal of Clinical Oncology. 2021;39(6):608.
11. Salord F, Gaussorgues P, Marti-Flich J, Sirodot M, Allimant C, Lyonnet D, et al. Nosocomial maxillary sinusitis during mechanical ventilation: a prospective comparison of orotracheal versus the nasotracheal route for intubation. Intensive Care Medicine. 1990;16(6):390–393.
12. Tomaszewski C, Runge J, Gibbs M, Colucciello S, Price M. Evaluation of a rapid bedside toxicology screen in patients with drug toxicity. Journal of Emergency Medicine. 2005;28(4):389–394.
13. Disfani HF, Kamandi M, Mousavi SM, Sadrzadeh SM, Farzaneh R, Doolabi N, Rahmani K. Risk factors contributing to the incidence and mortality of acute poisoning in emergency departement patient. Epidemiology and Health. 2019;41:e2019016.
14. Wood LDHSG, Hall JB. Principles of critical care of respiratory failure. In: Murray JF, Nadal JA, editors. Textbook of respiratory medicine. 3rd ed. Philadelphia: WB Saunders; 2000.
15. Rosner F. Moses Maimonides' treatise on poisons. JAMA. 1968;205(13):98–100.
16. Rayisyan M, Zakharova N, Babaskina L. Complexions therapy and severe intoxication by thallium salts. Journal of Environmental Science and Health, Part A. 2021;56(4):445–453.
17. Ferede B, Ayenew A, Belay W. Pelvic fractures and associated injuries in patients admitted to and treated at Emergency Department of Tibebe Ghion Specialized Hospital, Bahir Dar University, Ethiopia. Orthopedic Research and Reviews. 2021;13:73.
18. O'Connor MFHJ, Schmidt GA, Wod LDH. Acute hypoxemic respiratory failure. In: Hall JBSG, Wood LDH, editors. Principles of critical care. 2nd ed. New York: McGraw-Hill; 1998.
19. Griffin JP. Methaemoglobinaemia. Adverse Drug Reactions and Toxicological Reviews. 1997;16(1):45–63.
20. Abebe AM, Wudu KM, Shewangashaw NE. Assessment of knowledge and practice of nurses on initial management of acute poisoning in Dessie referral hospital Amhara region, Ethiopia, 2018. BMC Nursing. 2019;18(1):60.
21. Adnet F, Borron SW, Finot MA, Lapandry C, Baud FJ. Intubation difficulty in poisoned patients: association with initial Glasgow Coma Scale score. Academic Emergency Medicine. 1998;5(2):123–127.
22. Murphy C. Hypertensive emergencies. Emergency Medicine Clinics of North America. 1995;13(4):973–1007.
23. Hardy KR, Thom SR. Pathophysiology and treatment of carbon monoxide poisoning. Journal of Toxicology: Clinical Toxicology. 1994;32(6):613–629.
24. Weingart SD. Preoxygenation, reoxygenation, and delayed sequence intubation in the emergency department. Journal of Emergency Medicine. 2011;40(6):661–667.
25. Mohammed SM, Abdelaziz Ismail AL, Nagy AA, Al-Metyazidy HA, Allam ZA. Effect of emergent nursing educational program on nurses' performance for patients with acute poisoning. Tanta Scientific Nursing Journal. 2021;21(2):224–250.
26. Hui WF, Hon KL, Leung AK. An overview of the pediatric toxidromes and poisoning management. Current Reviews in Clinical and Experimental Pharmacology. 2021;16(4):318–329.
27. Tassew SF, Feleke DG, Sisay Chane E, Birile TA, Amare AT, Dessalegn W, Yegizaw ES. Knowledge, attitude and practice of nurses working in South Gondar zone hospitals toward initial management of acute poisoning. PAMJ—One Health. 2021;7:32.