



PREScription AND ADMINISTRATION ERRORS INVOLVING A POTENTIALLY DANGEROUS MEDICINE

ERROS DE PRESCRIÇÃO E ADMINISTRAÇÃO ENVOLVENDO UM MEDICAMENTO POTENCIALMENTE PERIGOSO

ERRORES DE PRESCRIPCIÓN Y ADMINISTRACIÓN ENVOLVIENDO UN MEDICAMENTO POTENCIALMENTE PELIGROSO

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ABSTRACT

Objective: to identify the main errors of prescription and administration of enoxaparin. **Method:** this is a cross-sectional study, with a quantitative approach. All nursing technicians of the intensive care unit, medical and surgical clinical service in enoxaparin administrations and their respective prescriptions were observed, according to the sample calculation. A direct observation technique and in the prescription check list of prescription protocol use and administration of medications were used in the administration. EpiData 3.1 and SPSS 21.0 software helped tabulate and analyze data, presented in tables. **Results:** there were 175 prescriptions and administrations analyzed. The main errors of prescription were incorrect age of the patient and absence of the duration of the treatment. Administration errors were found to be incorrectly administered, absence of patient identification in bed, incorrect administration technique and incorrect time. **Conclusion:** fragility has been demonstrated, leading to medication errors and the improvement of the prescription and administration system needed. **Descriptors:** Medication Errors; Drug Prescriptions; Potentially inappropriate Medication List; Medication Therapy Management.

RESUMO

Objetivo: identificar os principais erros de prescrição e administração de enoxaparina. **Método:** estudo transversal, de abordagem quantitativa. Observação de todos os técnicos de enfermagem do serviço diurno da unidade de terapia intensiva, clínica médica e cirúrgica em administrações de enoxaparina e suas respectivas prescrições, conforme o cálculo amostral. Na administração foi utilizada técnica de observação direta e na prescrição *checklist* do protocolo de prescrição uso e administração de medicamentos. Os *softwares* EpiData 3.1 e SPSS 21.0 auxiliaram na tabulação e análise dos dados, apresentados em tabelas. **Resultados:** foram analisadas 175 prescrições e administrações. Os principais erros de prescrição foram idade incorreta do paciente e ausência da duração do tratamento. Para os erros de administração, identificou-se dose administrada incorreta, ausência da identificação do paciente no leito, técnica incorreta de administração e horário incorreto. **Conclusão:** foram demonstrados pontos de fragilidades que levam a erros de medicação, sendo necessário o aperfeiçoamento do sistema de prescrição e administração. **Descritores:** Erros de Medicação; Prescrição de Medicamentos; Lista de Medicamentos Potencialmente Inapropriados; Conduta Do Tratamento Medicamentoso.

RESUMEN

Objetivo: identificar los principales errores de prescripción y administración de enoxaparina. **Método:** estudio transversal, de enfoque cuantitativo. Observación de todos los técnicos de enfermería del servicio diurno de la unidad de terapia intensiva, clínica médica y quirúrgica en administraciones de enoxaparina y sus respectivas prescripciones, conforme al cálculo de la muestra. En la administración fue utilizada técnica de observación directa y en la prescripción *check list* del protocolo de prescripción uso y administración de medicamentos. *Softwares* EpiData 3.1 y SPSS 21.0 auxiliaron en los cuadros y análisis de los datos. **Resultados:** fueron analizadas 175 prescripciones y administraciones. Los principales errores de prescripción fueron edad incorrecta del paciente y ausencia de la duración del tratamiento. Para los errores de administración se identificó la dosis administrada incorrecta, ausencia de la identificación del paciente en la cama, técnica incorrecta de administración y horario incorrecto. **Conclusión:** fueron demostrados puntos de fragilidades que llevan a errores de medicación siendo necesario el perfeccionamiento del sistema de prescripción y administración. **Descriptores:** Errores de Medicación; Prescripciones de Medicamentos; Lista de Medicamentos Potencialmente Inapropiados; Administración De Terapia de Medicação.

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INTRODUCTION

Errors associated with health care are the third leading cause of death in the United States and the fifth cause in Brazil.¹⁻² These errors are a concern for health professionals, patients and hospital organizations.

The use of drugs in health institutions occurs through complex multidisciplinary and interconnected processes, interdependent and composed of professionals from different areas such as pharmacists, physicians, nurses, technicians and nursing auxiliaries. Therefore, effective communication among the team is required.³ Thus, the process of drug use requires an efficient interaction to promote conditions that help professionals to prevent errors, ensuring the patient a safe medical treatment.³ Among the errors that involve the use of medication, there is the prescription error, which has an important potential to cause negative consequences to patients. Prescription is the starting point for medication use and an important written communication link between the health team⁴. Illegibility, incompleteness and use of abbreviations are among the main factors with the potential to induce failures at the other end of the chain of use during the drug administration process, which can be patients' life-threatening.³⁻⁵

Administration is the most important activity involving the nursing team in the drug use process. It is the last chance to intercept and prevent a possible mistake made in the previous stages, being an important barrier to prevent errors of medication from the prescription and dispensing processes. However, after the nurse makes the decision to administer the medication, a small part of the medication errors can be intercepted before reaching the patient.⁶

Although most drugs have a safe therapeutic margin, some drugs have high risks inherent in the characteristics of their use. These drugs are characterized by a greater risk of harm to the patient when the use process fails. Therefore they are known as high-risk medicines or potentially dangerous medicines (PDMs). The errors that occur with these drugs are not so common, but when they occur they have high severity and can lead to lasting or irreversible injuries, compromising patient safety.⁴

Medication errors are avoidable and preventable.⁴ Thus, it is justified to seek solutions to minimize medication errors, as well as to avoid the risks of causing damages due to their occurrence. Therefore, it is important to identify the main errors of

administration and prescription of potentially dangerous drugs in hospital settings, as well as the impacts generated in the patient as a route of evaluating preventive actions.^{1,4-5}

OBJECTIVE

- To identify the main errors of prescription and administration of anticoagulant enoxaparin sodium in a public hospital in the interior of the State of Bahia.

METHOD

This study is a cross-sectional research carried out from June to September, 2015, in a public hospital in the state of Bahia, linked to the Unified Health System (SUS) network through the State Health Department of Bahia (SESAB). The hospital has 180 active beds in the specialties of Clinical Medicine, Surgical Clinic, Pediatrics, Neurology, Psychiatry, Intensive Care Unit (ICU) and Urgency/Emergency with an approximate coverage of 600,000 inhabitants.

The sample size was calculated for an alpha error of 5% and a beta error of 10%, considering the mean number of prescriptions of enoxaparin in the month before the beginning of data collection and number of prescription errors according to work performed in a Brazilian hospital (292.5 errors per 1000 items)⁶, totaling 74 prescriptions. However, all the prescriptions and administrations carried out on the day/period were collected until the evaluation of the administration of all nursing technicians was exhausted.

The inclusion criteria included the prescriptions and administrations of the drug enoxaparin sodium in patients admitted to the ICU (10 beds), the male and female medical clinic (32 beds) and the male and female surgical clinic (33 beds). The other sectors of the hospital were not evaluated due to the lack of prescriptions for enoxaparin during the study period (pediatrics, psychiatry and neurology). The emergency department was not included in the study because the patients in this sector were not hospitalized in the hospital organization.

Nursing professionals included those who worked in the daytime service of the sectors mentioned above. During the administration process, data were collected regarding the type of employment relationship, gender, time in the profession/position and number of weekly work hours in the hospital.

The administration of enoxaparin was monitored by a trained investigator, using the direct observation technique, at standardized

times during the daytime period. Observations were made on the activities of nursing professionals responsible for administering drugs in the selected units. All details related to the procedure were noted: administration time, dose administered, dose omission, route of administration, technique of preparation, technique of administration, patient who received the medication, patient identification.⁷ Following the follow up of the administration, the evaluation of the prescription was performed and all the details were recorded in a form for further comparison. The evaluation of the prescription was performed using a data collection instrument containing the check list referring to the prescription protocol for the use and administration of medicines of the Ministry of Health. This evaluation was performed after the follow-up of the administration because the researcher could not verify an error and not mention to the health professional for ethical reasons.

The patients' records were used as a complementary source for the collection of sociodemographic data. Prescription and administration errors related to enoxaparin were defined as dependent variables. Independent variables included the sociodemographic data and hospital sectors (medical clinic, surgical clinic and ICU).

Prescription errors included inadequacies observed in the different items (name, age and weight of the patient, prescription of the drug according to the Brazilian Common Denomination (DCB), route of administration, pharmaceutical form, frequency of administration and prescribed dose of the drug, prescription, electronic prescription, use of abbreviations, medical record number, bed and hospitalization unit and duration of treatment) of patients' prescriptions containing incomplete, illegible or absent information, according to protocol of prescription, use and administration of medicines from the Ministry of Health. It was considered an illegible item when at least two researchers had difficulty reading the registry, requiring recourse to the prescriber or other documents for clarification.⁶

Management errors have been defined as any misconception practiced during the preparation and administration of medications for the medical prescription, failure to comply with hospital recommendations or guidelines, or the manufacturer's product instructions.⁸

Seven different types of administration errors were considered: 1) dose

administration errors - when the administered dose was different from the prescribed; 2) route of administration errors - when administration was performed in a route different from the prescribed; 3) time errors - when the administration occurred within 30 minutes before or after the prescribed time; 4) wrong patient - when the patient receiving the drug was different from the patient who received the prescription; 5) unidentified patient - when there was no identification of the patient's name and date of birth, mother's name, or chart number on bracelet or bed; 6) preparation and administration technique errors when different from those recommended by the institution and/or manufacturer; and 7) dose omission - when it was not administered and checked by nursing.

Categorical variables (prescription errors, administration errors, sociodemographic variables and hospital sectors) were described by absolute and relative frequencies. The Kolmogorov-Smirnov test was applied to verify the normality parameters, in the relative and absolute frequencies in the data errors of prescription and administration.

EpiData software, version 3.1 2008 and SPSS, version 21.0, 2012 (IBM Corp., Armonk, United States) was used for tabulation and data analysis, respectively. The descriptive statistics is presented by frequencies (absolute and relative), means and standard deviation, and the results are presented in tables. Statistical association between prescribing and administration errors among the medical clinic, surgical clinic and ICU sectors was verified using Kruskal-Wallis non-parametric test with Bonferroni correlation when post hoc analysis was necessary. Statistical significance was set for $p < 0.05$.

The present study was developed in accordance with Resolution of the National Health Council - CNS no. 466/12, with the number of CAAE: 29780014.80000.0055.

RESULTS

A total of 175 prescriptions were analyzed: 41.1% in the medical clinic ward, 47.4% in the surgical clinic and 11.4% in the ICU. Patients who had their prescriptions analyzed were 62.3% males, 89.7% were brown, 52.6% were single, and 56% were older than 60 years old (Table 1).

Table 1. Sociodemographic data of patients admitted to a public teaching hospital using enoxaparin. Bahia, Brazil, 2015.

	n	%
Sector		
Medical clinic	72	41.1
Surgical Clinic	83	47.4
ICU	20	11.5
Gender		
Female	66	37.7
Male	109	62.3
Ethnicity		
White	10	5.7
Black	8	4.6
Brown	157	89.7
Marital status		
Married	43	24.6
Single	92	52.5
Widow	28	16.0
Not described	12	6.9
Age group		
15- 40 years old	45	25.7
41- 60 years old	32	18.3
> 60 years old	98	56.0

Na Tabela 2 pode-se verificar os erros de prescrição entre os setores de UTI, clínica médica e clínica cirúrgica.

Table 2. Prescribing errors of inpatients in a public teaching hospital using enoxaparin, Bahia, Brazil, 2015.

	ICU (n=20)%	Medical C. (n = 72)%	Surgical C. (n = 83) %	p*
Patient´s name	0	4(5.6)	1(1.2)	0.194
Age	2(10)	32(44.4)	25(30)	0.032
Weight	20(100)	72(100)	83(100)	0.186
BCN	0(0.0)	16(22.2)	4(4.8)	0.001
Prescription				
Administration	0(0.0)	11(15.3)	3(3.6)	0.011
route				
Pharmaceutical	0(0.0)	16(22.2)	6(7.2)	0.004
form				
Frequency of	0(0.0)	3(4.2)	0 (0.0)	0.114
Administration				
Prescribed dose	0(0.0)	0	0 (0.0)	1.000
Signature of the	0(0.0)	5(6.9)	0 (0.0)	0.026
Prescriber				
Medical	13(65)	28(38.9)	79(95.2)	0.000
specialty				
Prescriber	0(0.0)	13(18.1)	0 (0.0)	0.000
Stamp				
Date of	0(0.0)	2(2.8)	0 (0.0)	0.237
prescription				
Computerized	0(0.0)	8(11.1)	3(3.6)	0.076
prescription				
Abbreviation	5(25)	3(4.2)	0 (0.0)	0.000
Number of	20(100)	72(100)	83(100)	1.000
records				
Bed	0(0.0)	25(34.7)	1(1.2)	0.000
Admission unit	0(0.0)	29(40.3)	3(3.6)	0.000
Treatment	20(100)	72(100)	83(100)	1.000
Duration				

Af: Absolute frequency. Rf: Relative frequency. ICU: Intensive Care Unit. Medical C.: Medical Clinic. Surgical C.: Surgical Clinic. BCN: Brazilian Common Name. ADM: Administration. *Significant p-value < 0.05. Post Hoc Analysis: a, b, c.

Foram observados 40 profissionais técnicos em enfermagem com vínculo empregatício efetivo durante administração de enoxaparina, sendo 92.5% (37) do sexo feminino e 80% com tempo de profissão menor ou igual a 5 anos. Todos possuíam vínculo empregatício efetivo e trabalhavam cerca de 32 horas semanais no turno diurno.

Dentre as falhas observadas durante a administração do medicamento podemos citar (Tabela 3) que na técnica de administração do medicamento incorreta verificou-se o não acionamento da trava de segurança; retirada da bolha de ar que aciona a trava de segurança antes da administração do medicamento ao paciente em 5% na UTI, 19,4% na clínica médica e 31% na clínica cirúrgica. Além desses na clínica cirúrgica observou-se que a administração pela via incorreta ocorreu na troca da via subcutânea (SC) pela via intramuscular.

A total of 40 nursing professionals with effective employment relationship during enoxaparin administration were observed, being 92.5% (37) female and 80% with a professional period of less than or equal to 5 years. All

had an effective employment relationship and worked about 32 hours a week during the day shift.

Among the failures observed during the administration of the drug, it can be mentioned (Table 3) that in the technique of administering the incorrect drug, the non-activation of the safety lock was verified; Withdrawal of the air bubble that activates the safety lock before administering the drug to the patient in 5% in the ICU, 19.4% in the medical clinic and 31% in the surgical clinic. Besides those in the surgical clinic it was observed that administration by the incorrect route occurred in the exchange of the subcutaneous route (SC) by the intramuscular route.

Table 3. Errors of administration of enoxaparin in patients admitted to a public teaching hospital, Bahia, Brazil, 2015.

	ICU (n = 20) Errors (%)	Medical C. (n = 72) Errors (%)	Surgical C. (n = 83) Errors (%)	p*
Medication administered	0 (0)	0 (0)	0 (0)	1000
Dosis	1 (5.0)	4 (5.6)	3 (3.6)	0.843
route	0 (0)	1 (1.4)	2 (2.4)	1000
Patient	0 (0)	0 (0)	1 (1.2)	1000
Patient identification	0 (0)	64 (88.9)	83 (100)	0.000
Preparation and administration technique	8 (40)	16 (22.2)	32 (38.6)	0.069
Time	2 (10)	5 (6.9)	18 (21.7)	0.002

Af: Absolute frequency. Rf: Relative frequency. ICU: Intensive Care Unit. Medical C.: Medical Clinic. Surgical C.: Surgical Clinic. BCN: Brazilian Common Name. ADM: Administration. *Significant p-value < 0.05. Post Hoc Analysis: a, b, c.

DISCUSSION

This study corroborates with the national literature regarding PDM prescribing errors in hospital organizations, from the point of view of their prevalence and their potential risk to patients. The literature shows that anticoagulants are among the class of drugs most involved in medication errors with harm to patients.⁹ However, there are few studies that involve errors of prescription and administration of low molecular weight heparin, enoxaparin.

This study evaluated 175 prescriptions and administrations of patients hospitalized during the period analyzed. Most of them were male due to although they assume a significant

weight in the profiles of morbimortality, their search for primary health care services is extremely irrelevant when compared to women, contributing to a greater frequency of hospital admission.¹⁰ Also, it can be inferred that males are the majority in accidents and deaths from external causes, and the fact that the hospital Investigated to have an important regional role in the care of trauma patients coming from federal highways that cross the city.¹¹⁻²

The number of elderly hospitalized during the research demonstrates that the aging of the population is an indisputable reality throughout the world, being marked by biological, psychological and social factors, requiring specific care and attention due to their state of greater vulnerability.¹³

The literature shows that prescribing errors are frequent and must be addressed by professionals who are involved in health care, with emphasis on teaching hospitals, where the safety culture is inserted during the training of professionals, can bring changes in the health system.³ The prescription at the study hospital is performed using a computer with an Excel spreadsheet, already standardized, with only the fields to be filled. In this prescribing model, some patient information data were not included, that is, the parameterization of the prescription was inadequate or insufficient.

Regarding the errors involving the name and/or identification of the patient, the sector presenting the highest prevalence was the Medical Clinic followed by the Surgical Clinic. Only in the ICU, there was no error showing that in this sector due to the critical conditions of the patients there is a greater care in the identification of prescriptions.¹⁴ Also, sSafety Culture studies show that ICUs have a higher degree of implementation, which suggests better care, with fewer errors.¹⁵ Prescriptions without identification can expose the patient to situations that may cost his life, since a possible exchange during the dispensing and/or administration of drugs can be fatal. Identification is a decisive item to ensure safety, reducing the possibility of the patient receiving inappropriate or non-prescribed medications.⁶

Weight is a necessary information for the safety of the dispensing and administration of several drugs, the results obtained in this study being greater than those found by Néri⁶, identifying the absence of this item in approximately seventy two percent of prescriptions. This item is indispensable since in the indications for the treatment of deep venous thrombosis (DVT), treatment of unstable angina and acute myocardial infarction, prevention of extracorporeal circuit coagulation during hemodialysis at the start of the hemodialysis session in patients at high hemorrhagic risk, the dose of enoxaparin should be prescribed in mg/kg of weight¹⁶, so this information is essential to ensure a safe treatment. However, the standard prescription of the hospital does not have specific space to enter the weight of the patient, which contributes to not filling this important information.

Regarding the official nomenclature, BCN, and in absence of it by the International Non-Denomination (INN), the legislation n. 9.787 in force since February 10, 1999 determines that the prescription of medicines should be made through the BCN in health services linked to

the public sector¹⁷. The results obtained in this study are reflective of the use of a standard prescription that brings the name of the standardized drugs in the hospital by the BCN, and also demonstrate that a great part of the prescribers is following this legislation and its obligatory, although prescriptions were found with the name of the medicinal product.

Missing information about the route of administration in the prescription is a worrying point, since medications that can be administered in different routes, for example, enoxaparin that has two options of route, subcutaneous and intravenous, may generate doubts in the nursing team at the moment of administration leading to errors that will compromise patient therapy. Also, prescriptions with incomplete information, but in a considerably smaller number than in this study.³ Other studies obtained lower¹⁸ values and near¹⁹ to this study.

The prescription of the pharmaceutical form is essential, since the drugs are marketed in the most diverse presentations, since it has influence on the ease of administration of the drug, having relation with the severity of the clinical picture of the patient, age group and desired result.³ However, the Enoxaparin is marketed only in the form of an injectable solution in a filled syringe, and the absence of such information does not raise doubts at the time of administration of the drug. The frequency of administration was another absent item in a small part of the prescriptions of the Medical Clinic, being an indispensable variable for the correct administration of the medication, since larger intervals between the doses can cause reduction of the expected result, in contrast smaller intervals may increase the risks of causing drug intoxication and consequently adverse reactions.

The name of the prescriber, signature and registration number in the professional council, when associated, give the prescription legal validity, and when these items are illegible or absent from the prescriptions should not be dispensed with or administered medications.¹³ The incompleteness of these data compromises communication when there is a need for some clarification by the dispenser and the nursing team, which can contribute to errors and compromise patient therapy. In this study, the absence of the signature and the name of the prescriber was not so significant, corroborating with the study carried out by Cardinal et al.²⁰

The date gives legitimacy to the prescription, which within this hospital is 24 hours. Comparing the results among the analyzed sectors, it is justified the absence of errors found in the ICU, because it is a place that must have a medical professional during the 24-hour period together with the entire multidisciplinary team due to the severity of the patients needing this full-time follow-up. In the surgical and medical clinic, it may be suggested that not all physicians are aware of the changes in the date of the prescriptions of the previous days, since the prescriptions are recorded.

The use of abbreviations is pointed out as one of the factors that can contribute to medication errors, some of them being fatal. The use of abbreviations is among the most cited causes of medication errors due to their potential for confusion and communication failures, and it is recommended that the prescription be made without their use.³ The National Agency of Sanitary Surveillance (ANVISA) recommends that standardized abbreviations should be standardized to promote adequate communication among members of the health team.²¹⁻² The Security Protocol in the Prescription, Use and Administration of Medicines of the Ministry of Health establishes safety recommendations and recommends some abbreviations that should not be used. They are the “units” (U) and “international units” (IU), considered the most risky abbreviations, since they can cause a dose ten times higher than prescribed.²¹⁻²

During the research, one of the errors that presented great relevance was the number of the medical record absent in all the prescriptions analyzed. This is because in the hospital, there is no medical record number in the prescriptions, that is, the patient's registration number is generated at the time of the service, but restricted only in the medical record, does not extend to the prescription. The use of electronic prescriptions when it is mandatory to fill important fields such as the medical record number can significantly reduce the occurrence of errors³, since once they facilitate the administration of the medicine. The low readability of prescriptions, especially handwritten ones, has been pointed out as an important cause of communication failure among professionals involved in hospital care and a contributing factor for medication errors.³ The study showed that in some sectors, the prescription was handwritten as Clinical and Medical Clinic that should not occur, since handwritten prescriptions lead to common medication

errors due to the lack of readability of the prescribers' handwriting.

Although they are essential items in the prescriptionThe bed and the unit of treatment errors were significant in the medical clinic and surgical clinic. These items are crucial to patient safety, since lack of information about them can result in medication being administered to the wrong patient or making it difficult to locate the patient.

The duration of treatment is undoubtedly one of the items that could not be lacking in a prescription, which should contain information about the time of treatment of the patient, independent of diagnosis, avoiding that the drugs can be consumed continuously without indication, and consequently developing a possible drug interaction and/or an intoxication compromising the therapy due to the indiscriminate use of the drug.²³ Because the hospital prescriptions happen every 24 hours, many professionals do not consider this item as important, which may justify this high value of absence.

It is necessary to have the written requests accurately, clearly, comprehensively and fully read for nursing professionals to perform their activities properly. The system of use of medicines starts with the medical prescription. A failure at this stage may reflect, directly or indirectly, problems in subsequent phases, increasing the statistics of medication errors, affecting patient safety.²⁴

Regarding medication administration, it was verified that the errors observed during the analysis were committed by nursing technicians. The literature mentions that this occurrence is due to the administration of drugs in hospital institutions is usually carried out by these professionals, who often do it without the supervision of the nurse, more involved with the administrative problems, which distances him from the direct supervision of this process, even taking responsibility for all its staff, and providing a risk situation for the patient in the safe elaboration of drug therapy.²⁴⁻⁵

Regarding the most committed errors during the administration of the drug, there were situations in which the medicine was administered in the incorrect dose in the three sectors observed. The errors involved in the doses are common and present a considerable risk to the patients. This risk should increase as the diversity of the product's presentations on the market increases. Effects related to dose-related errors may increase adverse reactions due to the rate of absorption or rapid release, which

depending on the drug may cause serious adverse events to the patient.²⁶

Regarding situations in which the administration of the drug was done by other route than prescribed, findings recorded in the medical clinic and surgical clinic where the enoxaparin was administered erroneously, intramuscularly. Thus, the administration of drugs in routes other than those indicated by the manufacturer may represent variation in the bioavailability of the drug and thus modify the therapeutic response and injure the patient.⁷

It should be noted that in drug administration, it is essential to consider the pharmaceutical form and the chemical and physical characteristics of each drug. In this way, correctly administering medication to patients is a task that competes with the nursing team that represents an important barrier to interception of errors. However, professionals must be technically and scientifically backed to perform safe and effective administration of pharmacotherapy.²⁷

It is known that the lack of identification of the patient can lead to medication administration in the wrong patients. In this study, it was evidenced that the surgical clinic and the ICU are sectors that most identified the patients at the time of hospitalization. However, this identification is made in the patient's bed at the time of hospitalization manually or the name is typed and printed. This type of identification can favor the occurrence of errors when there is a change of beds or even when the patient is discharged, since the removal of the name often remains for a certain period, enough that in that interval there may be confusion. During the administration of the drug, the safest method being the use of a brace.²⁷ In the medical clinic, there was an expressive number (88.9%) of patients without any identification. However, it is worth noting that even though there is no identification in the patients, the name of the nursing team was not checked at the time of administration.²⁷

Failures (time of administration, route of administration, administration technique, correct identification of patients, among others) were observed in nursing professionals failing to correctly perform the procedure during the preparation and administration of enoxaparin. Enoxaparin Sodium comes in a filled syringe (20mg/0.2mL, 40mg/0.4mL, 60mg/0.6mL and 80mg/0.8mL), being ready for use and not requiring manipulation to adjust doses. It is an PDM that, according to

the Institute for Safe Practices in the Use of Medications (ISMP), presents an increased risk of causing significant harm to patients due to failure of the use process with devastating consequences, leading to permanent injury or death.³ Manipulation of the syringe with change of dose was one of the failures committed by the team during the administration of the drug, when in several moments part of the content contained in the syringe of the drug was transferred to an insulin syringe and administered to the patient because there was no prescribed dose by the doctor at the hospital.

Another error observed during the research was the safety device in enoxaparin. Activation of the safety device is only possible if the plunger is completely lowered by expelling the air bubble during medication administration and to avoid losing the medication, the plunger should not be pressed to expel any air bubble before administering the injection.¹⁶ This procedure to expel enoxaparin air bubbles was observed in several situations. This shows that much technical nursing is not aware of the correct technique of administration of enoxaparin demonstrated the importance of continuing education to improve their knowledge.

The constant updating of the nursing group can avoid or reduce errors, whether through mini-courses, lectures or periodic meetings, it is necessary in view of the speed with which new concepts, technologies and medicines are introduced in the health area. Continuous education of the nursing team is necessary to reduce possible doubts regarding procedures related to medications and their administration techniques.²⁸⁻⁹

Another frequent error was regarding the time of administration of the drug. The high incidence of time errors possibly has as main determinants internal factors to the administration process, such as the schedule of the nursing team, concentrating a high number of medications in certain periods, usually the morning, causing many of them not having their time met due to the high demand for service in the unit.²⁹

In this context, problems and failures to be overcome require the knowledge that all health care activities have fragile points that can compromise patient safety and the key to reducing risk is to create an environment without culture of guilt and surveillance and cooperation culture.³⁰

This study presents limitations. Despite the importance of the findings, this study was performed in a single hospital and data can not be extrapolated to other hospital

organizations. Also, the decision errors could not be verified in this study, since the analysis was restricted to medical prescription and administration.

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