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BUILDING SOLUTIONS FOR THE SAFETY OF THE PATIENT WITH HEART DISEASE USING WARFARIN: A QUALITATIVE STUDY

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ABSTRACT

Objective: to identify with the nursing team strategies to promote the safety of the patient with heart disease using warfarin.
Method: an exploratory and descriptive research with a qualitative approach, developed in clinical/surgical inpatient units at a public referral hospital in cardiovascular care. The participants were 20 professionals from the nursing team who work in these sectors. Data collection took place in May and June 2017, through discussion groups and covered the five stages of the Maguerez Arch, which were held in a single meeting that was repeated four times in order to involve the largest number of professionals. The obtained data were submitted to thematic analysis.
Results: two categories emerged: Recognizing the problem and identifying its causes; and Building hypotheses of solution to the problem. The results showed that the group recognizes the use of oral anticoagulant as a risk factor for serious adverse events. Strategies such as knowing the target international normative relationship of each patient, providing information on the use of anticoagulant to patients and their families, among others, can contribute to make this care safer.
Conclusion: the moments of discussion favored by this study served as learning to continue the future implementation of the strategies pointed out by the group and thus increasingly improve the care provided to patients with heart disease and their families.

DESCRIPTORS: Anticoagulants. Heart diseases. Nursing. Patient safety. Warfarin.

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CONSTRUINDO SOLUÇÕES PARA SEGURANÇA DO PACIENTE CARDIOPATA EM USO DE VARFARINA: ESTUDO QUALITATIVO

RESUMO

Objetivo: identificar com a equipe de enfermagem estratégias para promover a segurança do paciente cardiopata em uso de varfarina.
Método: estudo exploratório e descritivo com abordagem qualitativa, desenvolvido nas unidades de internação clínica/cirúrgica em um hospital público de referência em atendimento cardiovascular. Os participantes foram 20 profissionais da equipe de enfermagem que atuam nesses setores. A coleta de dados ocorreu nos meses de maio e junho de 2017, por meio de grupos de discussão e percorreu as cinco etapas arco de Maguerez, as quais foram realizadas em único encontro que foi repetido por quatro vezes com o intuito de envolver o maior número de profissionais. Os dados obtidos foram submetidos à analise temática.
Resultados: emergiram duas categorias: Reconhecendo o problema e identificando suas causas; Construindo hipóteses de solução para o problema. Os resultados evidenciaram que o grupo reconhece o uso do anticoagulante oral como fator de risco para eventos adversos graves. Algumas estratégias como conhecer a relação normativa internacional alvo de cada paciente, proporcionar informações sobre o uso de anticoagulante aos pacientes e familiares entre outras podem contribuir para tornar esse cuidado mais seguro.
Conclusão: os momentos de discussão favorecidos por este estudo serviram de aprendizado para dar continuidade a implementação futura das estratégias apontadas pelo grupo e assim melhorar cada vez mais a assistência prestada aos pacientes cardiopatas e seus familiares.

DESCRITORES: Anticoagulantes. Cardiopatias. Enfermagem. Segurança do paciente. Varfarina.

DISEÑO DE SOLUCIONES PARA LA SEGURIDAD DE LOS PACIENTES CON ENFERMEDADES CARDÍACAS EN TRATAMIENTO CON WARFARINA: UN ESTUDIO CUALITATIVO

RESUMEN

Objetivo: identificar, junto con el equipo de enfermería, estrategias para promover la seguridad del paciente en tratamiento con warfarina.
Método: investigación exploratoria y descriptiva con enfoque cualitativo, realizada en las unidades de internación clínica/quirúrgica de un hospital público de referencia en atención cardiovascular. Los participantes fueron 20 profesionales del equipo de enfermería que se desempeñan en estos sectores. Los datos se recolectaron en los meses de mayo a junio de 2017 por medio de grupos de discusión y se abarcaron las cinco etapas de Arco de Maguerez, que se realizaron en una única reunión repetida cuatro veces con el propósito de abarcar a la mayor cantidad posible de profesionales. Los datos obtenidos se sometieron a análisis temático.
Resultados: surgieron dos categorías: Reconocimiento del problema e identificación de sus causas; y Elaboración de hipótesis de solución para el problema. A través de los resultados se hizo evidente que el grupo reconoce el uso del anticoagulante oral como un factor de riesgo para eventos adversos graves. Algunas estrategias, como conocer la relación normativa internacional objetivo de cada paciente y proporcionar informaciones sobre el uso de anticoagulantes a los pacientes y familiares, entre otras, pueden ayudar a mejorar la seguridad de este cuidado.
Conclusión: los momentos de discusión facilitados por este estudio servirán como aprendizaje para dar continuidad a la implementación futura de las estrategias señaladas por el grupo y, de esta manera, mejorar cada vez más la atención prestada a los pacientes cardíacos y a sus familiares.

DESCRIPTORES: Anticoagulantes. Cardiopatías. Enfermería. Seguridad del paciente. Warfarina.

INTRODUCTION

The antithrombotics are drugs used to prevent the formation and growth of blood thrombi. The blood outside the blood vessel undergoes a process called coagulation, in which the figured elements (red blood cells, leukocytes, platelets) clump together to prevent its extravasation and stop bleeding. There are two classes of antithrombotics: anticoagulants that retard coagulation as they inhibit fibrin formation, and antiplatelet agents that act to prevent platelet aggregation.[1]

Using antithrombotic drugs brought many benefits to Medicine, such as making hemodialysis and major surgery feasible, since blood clotting in extracorporeal circuits can be avoided. In addition, antithrombotic therapy has reduced the risk of developing thrombi in lower limb veins, reducing the number of deaths from pulmonary thromboembolism; reducing heart attack deaths and stroke risk in patients suffering from atrial fibrillation. It also enables several tests to be performed whose blood elements need to be analyzed.[2,3]

Oral anticoagulants, also known as coumarinic agents, are vitamin K antagonists, an important cofactor for hepatic synthesis of coagulation factors II, VII, IX and X. One of the representatives available in the Brazilian market is warfarin. Its indications for permanent anticoagulant therapy include primary prevention of thromboembolism in atrial fibrillation and in patients with mechanical heart prosthesis, and secondary prevention of venous thromboembolism and acute coronary syndromes.[4]

The use of this drug requires strict clinical control by the health team, considering that the main complication of anticoagulant therapy is hemorrhage and in such cases treatment needs to be discontinued. Some cases of severe bleeding require interventions such as transfusion and surgery as in the case of intercerebral and gastrointestinal bleeding.[3]

The risk for bleeding complications or the occurrence of thromboembolic events is a concern in patients receiving oral anticoagulant therapy. Depending on genetic, environmental, food, and other medication factors that influence absorption, pharmacokinetics, and pharmacodynamics, the effect of the vitamin K antagonist varies from individual to individual and should therefore be monitored by laboratory examination.[5]

Laboratory monitoring is performed by the International Normalized Ratio (INR), which is an examination calculated from prothrombin activity and reflects blood clotting time. Periodic performance of the INR during warfarin treatment is critical to enable dose adjustments and prevent adverse events. Target INR is defined for each specific indication, with the most common therapeutic range being between 2.0 and 3.0. All of these quirks make warfarin a drug with a high frequency of medication errors.[5] The study of 101,588 non-institutionalized Finnish individuals taking warfarin showed that 3.3% had hemorrhages, of these 12% were intracranial hemorrhages and 38% were fatal. More than a third of extra-cranial hemorrhages were gastrointestinal in origin and 6% of them were also fatal.[6]

In the United States and Australia, anticoagulants are among the five classes most related to drug incidents. The high frequency of reported errors worldwide, coupled with the severity of the damage that these errors can generate, make warfarin one of the leading potentially dangerous drugs.[7]

Thus, prevention of adverse events involving warfarin should be a priority for patient safety because of its potential for harming them. In a public hospital institution specializing in the care of adults with cardiovascular disease, where the study was developed, the use of warfarin is standardized, and the risks to which the health professionals, especially the nursing workers and the patients, are exposed daily, are frequent.

Thus, considering that the nursing team stands out for performing various activities, especially in the preparation and administration of medicines, the adoption of good practices and the reduction of errors related to health care is fundamental for patient safety.[8]

In this sense, this study was conducted with the following question: What strategies can be used by the nursing staff to promote the safety of patients with heart disease on warfarin? And it aimed to identify strategies with the nursing staff to promote the safety of patients with heart disease on warfarin.

METHOD

This is an exploratory and descriptive study with a qualitative approach, developed in a 130-bed public hospital, specializing in the care of adults with cardiovascular disease, with a mean of 4,186 hospitalizations, 676 surgical procedures,20,395 endovascular procedures and 26,333 outpatient consultations. The study setting was this institution, specifically the clinical/surgical hospitalization A unit, with 33 beds, and the B unit with 22 beds, where six nurses and 23 nursing technicians work, totaling 29 professionals.

Of the 29 nursing professionals, 20 met the inclusion and exclusion criteria, four being nurses and 16 nursing technicians, who work with patients on oral anticoagulant therapy. As an inclusion criterion, the nursing professionals should be acting in the research setting, regardless of their working time, and the exclusion criteria were being on maternity leave, health care leave, premium leave or vacations. Each participant was personally invited and informed about the study and its organization, as the dates for the meetings were planned daily with the sector's leadership.

Data collection took place in May and June 2017, with four meetings, using the Maguerez Arch Method, which is a way of searching, in joint activities, with those involved to identify problems and thus to know and solve them, in view of the transformation of the reality and, in this way, the researched and researchers are constituted as subjects of praxis.[9]

The method consists of five stages (Figure 1), where the problem starts from the reality itself and the purpose is to make the subject aware and act intentionally to transform it. This reflection leads to the definition of the key points. Already in theorizing is the time to investigate the key points of the problem and to define and develop hypotheses of solution to the problem with reference to all the previous stages and thus apply one or more hypotheses as a form of practical intervention in reality.[9]

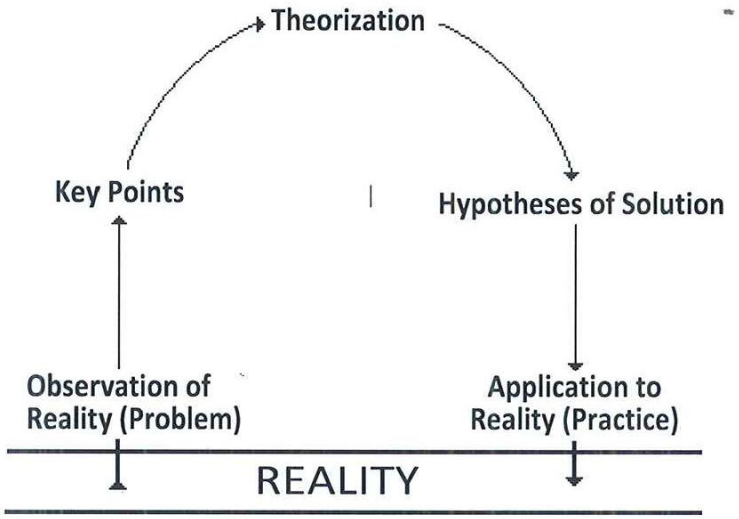

Figure 1 – Maguerez Arch[9]

The meetings took place in the prescription room of the inpatient unit itself, during working hours, and the group agreed to a time not exceeding 90 minutes so as not to impair the care of the

patients hospitalized there. Data was recorded by recording all meetings, by means of an audio recorder and by a descriptive recording of the group activities. It is noteworthy that each meeting dealt with the same theme, whose discussion was organized respecting the five stages of the Maguerez Arch.

To attend the first stage of the arch, which is the observation of reality, the participants were presented, with the aid of audiovisual resources through the *Power Point* program, fictitious situations regarding patients with heart disease on warfarin who had little knowledge about the effects, complications, and interactions that this medication can cause. With this activity the participants could understand that the reality to be observed in this study would be the safety of the patients with heart disease on oral warfarin treatment.

To meet the second stage of the arc, by identified the key points, the participants were given a fictitious case study that simulates a serious adverse event related to the use of an oral anticoagulant that may occur with patients from this institution. The participants were encouraged to analyze and describe what happened to the patient, and what the adverse event was.

Following the stages of the arch, in theorization, the participants had to ask and answer in writing why the events occurred. In the stage of the hypothesis of solution, which consists in elaborating viable alternatives to solve the identified problems, they were collectively building strategies that they could develop themselves in the institution. In the stage of application to reality with the renewed knowledge to transform the observed reality, they listed the strategies that would be viable and classified them into actions to be implemented in the short (up to 30 days); medium (up to 60 days) and long term (more than 60 days).

The obtained data were analyzed according to the thematic analysis,[10] through pre-analysis, material exploration and data processing and interpretation. In the pre-analysis the initial objectives of the study were resumed with the elaboration of indicators that guided the final interpretation. The units of registration (keywords or phrases), the unit of context (the delimitation of the context of comprehension of the unit of record), the clippings, categorization form, coding modality and the most general concepts that guided the analysis were determined. In the exploration of the material, the coding took place, for which it was proposed an initial work with text clipping in units of meaning, followed by the choice of counting rules and finally the classification and aggregation of the data, choosing the theoretical or empirical categories that will command the specification of the themes. In the treatment of the results obtained and in the interpretation, the interpretation of the data already categorized took place according to their theoretical framework and basis. At this stage, 12 recording units were obtained, data was coded and organized according to its similarities, being configured in two categories, and the most significant statements were selected to illustrate the analysis and discussion of the results.

All the participants signed the Free and Informed Consent Form, where the anonymity of the participants and of the information was guaranteed through the use of a coding system, as follows: the name of the participants was replaced by the letter G (Group) followed by the Arabic number corresponding to the group in which they participated, i.e., G1, G2, G3 and so on, regardless of their professional category.

RESULTS

20 of the 29 nursing team professionals working in the study units participated, four being nurses and 16, nursing technicians. Their ages ranged from 29 to 52 years old, their working time in the profession ranged from 6 to 24 years and their working time in the institution ranged from 3 to 30 years.

From the analysis of the data obtained in the meetings with the use of the Maguerez Arch, two categories were elaborated: Recognizing the problem and identifying its causes; and Building hypotheses of solution to the problem.

Recognizing the problem and identifying its causes

In this thematic category, the participants' reports demonstrate that the use of anticoagulants by the patients is susceptible to complications and that the administration of this medication requires the team's knowledge and responsibilities.

[...] *many patients don't even know that they were taking marevan so they don't care about eating* (G2).

[...] *it's very risky, you have to take it right, I've seen a patient bleeding from his nose, by the urine* (G3).

[...] *this routine of asking the nurse before is good, because we who do a 12h shift don't know if the patient had the exam altered in the previous day or not* (G4).

[...] *discussing these cases is very good because we also have a lot of questions* (G3).

After the participants have recognized the problem as a present reality, they began to reflect and ask the why of the events identifying their causes.

[...] *the adverse event was that the PAT control was not performed for two days, and the last result was already a little high* (G1).

[...] *the patient was receiving other medications such as dipyrone which may interfere with marevan, this also harms* (G2).

[...] *the adverse event was death, and that will only change when the whole team understands the risks of this medication* (G3).

[...] *there was a failure of the doctor in not ordering the tests.* [...] *but on second thought we also have to see the result of the exam and if there was no exam we have to ask the nurse and the nurse with the doctor* (G4).

In these reports, it is possible to observe the professionals' concerns about the risks that oral anticoagulants may come to cause to the patients. It is noticed that the team feels responsible and concerned to provide an adequate and safe assistance.

Constructing hypotheses of solution for the problem:

In this thematic category, the participants' reports contribute to the elaboration of feasible alternatives to solve the identified problems, critically and creatively.

[...] *to review with the lab the correct technique for collecting the prothrombin activity time test because many lab professionals do not do it correctly and this alters the test result*. [...] *to make a control sheet containing the INR data, which is in the patient's medical record.* [...] *to follow the institution's routine of administering marevan at 18h after checking the INR value with the nurse* (G1).

[...] *to suggest that two copies of the PAT exam request be printed so that one stays in the lab and one in the unit so that we can keep track of which patients were asked each day.* [...] *as it goes out in the prescription an item: laboratory exams. Could go out: laboratory exams – PAT. Thus, when the nurse does the scheduling they can already know which patient has collection for that day.* [...] *to create a table with INR baseline values by medical diagnosis.* [...] *to make an orientation flyer for the patient and relatives.* [...] *to create anticoagulant steering groups* (G2).

[...] *to advise the patient about the risk of bleeding and ask that if this should happen, to always inform the team.* [...] *to always administer marevan after confirming with the nurse.* [...] *to have an institution folder with dietary guidelines, exam values, signs and symptoms of complications.* [...] *to use pre- and post-operative groups to reinforce the guidelines for the use of anticoagulants* (G3).

[...] *to generate a report in the system on which patients are using warfarin would facilitate the verification of results.* [...] *to have a routine protocol for collecting this exam.* [...] *to ask the laboratory to provide feedback to the unit nurse alerting on the altered results.* [...] *to encourage the patients to know their medications, their disease and their treatment as a whole.* [...] *to work on the education and prevention of this care through guidance groups during hospitalization preparing the patient for discharge.* [...] *to prepare a folder with guidelines for patients and families* (G4).

It was possible to observe the involvement of all in the effort to think about solutions that did not depend only on each other, but that each could be contributing to minimize the incidents that the use of anticoagulant medication may be promoting.

The proposals prioritized by the participants were classified as short-term (up to 30 days); medium-term (up to 60 days) and long-term (more than 60 days) actions, as per Table 1.

Table 1 – Prioritization of the action proposals to be implemented

Term	Proposals
Short-term	Objective: to improve the blood collection technique for clotting tests. Activity: asking the laboratory manager for training and guidance for the exam collection team.
	Objective: to know the target International Normalized Ratio of each patient. Activity: discussing with the medical head of the units about the possibility of routinely describing the target International Standardized Ratio of each patient in the medical evolution or in the prescription as an observation in the field of warfarin prescribing.
	Objective: to provide information on anticoagulants to the patients and family members. Activity: reviewing with the pre- and post-operative groups whether the information on the risks and benefits of anticoagulant use is being considered.
	Objective: to track each patient's International Normalized Ratio results by date. Activity: preparing a daily International Normalized Ratio record form in medical record.
Mid-term	Objective: to know the target International Normalized Ratio of each pathology. Activity: preparing a table with base value of the International Standardized Ratio for medical diagnoses.
	Objective: to provide information on anticoagulants to the patients and family members. Activity: elaborating an easy-to-comprehend informative folder.
	Objective: to improve the professionals' knowledge. Activity: instituting an educational booklet on the use of oral anticoagulants in the hospital unit.
Long-Term	Objective: to encourage the patients to know their medications, their disease and their treatment as a whole. Activity: informing the patient the value of their target International Normalized Ratio and encouraging them to ask the result of their examination.
	Objective: to know daily which patients will have prothrombin activity time collection Activity: requesting from the technology and computer industry that, when the prothrombin uptime exam is requested, it is to appear on the medical prescription in the item lab exams.

DISCUSSION

The process of administering medications is multidisciplinary and involves several stages, requiring responsibility from everyone: doctors, pharmacists and nursing staff, to promote patient and professional safety. This process begins with the drug prescription, continues with its dispensing, then its preparation and administration to patients, and ends with the recording and monitoring of actions and reactions of the drug in the patient.[11]

Preparing and administering the medications fall under the responsibility of all the members of the nursing team; however, the nurse is responsible for planning, guiding and supervising the actions related to the drug therapy. Knowledge on the drug to be administered, its action, route of administration, interactions, and adverse effects is required to prevent a medication error.[12]

That is because medication errors are important causes for morbidity and mortality. And it is important for the health professionals to understand the definitions related to medication errors, and to know their causes, consequences and risk factors. This will enable the team to strategize and take action to reduce and prevent adverse events, improve communication with patients and family members, and ensure safe care.[13]

Even with the current knowledge, there is still a lack of knowledge and information on the part of the nursing professionals related to the use of warfarin in the hospital setting. In this regard, the staff may receive specific continuing education to serve these patients and the professionals may develop strategies for the management of therapy to prevent the adverse events and, where appropriate, to treat these events.[14]

The strategies proposed by the study participants to know each patient's INR target value, to know how often this test should be collected, to track the outcomes according to the diseases, increase the professionals' knowledge of anticoagulant use and demonstrate the interest of the nursing staff in improving the care provided to these patients. Thus, when the professionals are properly informed about the characteristics of the disease as well as about the forms of treatment, they can effectively contribute to the prevention of complications and to the adherence to treatment by the patient.[15]

Qualification and professional improvement aim to incorporate new theoretical, technical, operational, ethical and political knowledge in order to bring benefits to the institution, the professional and the patients who need care.[16]

It is necessary that the professionals seek the construction of their own knowledge and, for this, the nursing techniques and technologies are instruments that constitute the knowledge used by the professionals in the daily development of their praxis. Thus, in the care practice, while considering the nursing knowledge, it is possible to find forms of technologies linked to education that promote the learning process. Educational technology is not just the use of means, but a facilitating instrument that provides the learner and educator with knowledge that favors knowledge construction and reconstruction.[17]

The strategies of preparing an educational booklet on the use of oral anticoagulants in the hospital unit, preparing an information folder for patients and family members, informing the patient about the value of their target INR, and encouraging them to ask the result of their exam, and guiding the patient and family members about the use of anticoagulant in pre- and post-operative groups, demonstrate that the group begins to understand that patients and family members can contribute to the prevention of health care-related adverse events.

It is believed that the use of technologies and visual resources produced from the collective need with a participatory approach used during the needs identification phase as well as the contribution in the indication of the contents is fundamental for the professionals' involvement in their own issues, surpassing their problems.[18]

Considering that, in past decades, the patients may have been discouraged from being active participants in their care, today we understand that optimal care depends on the active involvement of patients and their families with the free flow of information being an essential condition for this optimal care.[19]

Given that the patient with a heart disease has a chronic illness and that warfarin is an oral anticoagulant, often in continuous use after hospital discharge, the guidance given during the hospitalization process promotes patient and family knowledge about the symptoms and prevention of possible harms, also training them for their care at home.

In this sense, a study shows that the patient, after the first and the fourth week of hospital discharge, received reinforcement of the orientations through telephone contact to remember information pertinent to the use of oral anticoagulant, and at this moment the performance of professional examinations and dose adjustments of the drug was evaluated.[20]

In addition, the patients are the last individuals in the drug use cycle and can help minimize the number of medication errors. When they are aware of the prescribed treatment, they are vigilant of their medications and, since they are actively involved, they ensure continuity of care.[21]

Thus, both patients and their families and the professionals should be aware of the care to be taken during the anticoagulation therapy, since this presents risks to the patient's health and the professional who is in contact with him should know how to identify these risks and the measures to be taken in cases of complications.[14]

The hypotheses of solution proposed in this study reflect the result of the reflective process, which was collectively constructed by the nursing team, enabling its application to the reality with a consequent transformation of the care practices. The approach of the subjects about the problem, although in a small scale, is important to make them participants in the historical construction of reality.[9]

The literature corroborates that the change in the care practice and patient safety occurs when the professionals participate. Thus, it is clear that the nurse's role is important for patient compliance with oral anticoagulant treatment and that this can determine treatment success and ensure patient safety. Thus, the nurse's action can contribute considerably to obtaining good results, whether in direct care, in the elaboration of the care plan or in the orientation of the patient and their relatives.[22]

As limitations of this study the following can be pointed out: the involvement of just nursing professionals, leaving aside other health professionals who work with patients that use this type of medication; and the study being conducted in a single health institution that limits the results and the discussion to their geographical and social limits.

CONCLUSION

In this study, it was observed that the moment was unique for bringing the team closer and enabling moments of dialog among the professionals, favoring reflection on the context in which they are inserted, on their relationships with the patients, with the co-workers and with themselves.

Although the nursing professionals believed that they were developing safe actions regarding oral anticoagulant administration, they realized that other strategies can contribute to improving and strengthening this process, one of them being to involve the patient, through guidance, in their care. In this sense, the goal of identifying with the nursing team strategies to promote the safety of patients with heart disease on warfarin was achieved.

Therefore, the following strategies for promoting the safety of the patient with heart disease on warfarin are recommended: training the health professionals who work with patients that use this type of medication; creating standard operating procedures for controlling and managing TAP and INR, as well as orientations for the perioperative period of the patients using warfarin and their relatives; and preparation of booklets and folders for patients, their families and health professionals.

The discussion moments favored by this methodology served as learning to give continuity to the future implementation of the strategies signaled for the group and thus to increasingly improve the assistance given to the patients with heart diseases and their relatives.

New research studies are suggested after implementing these strategies to assess the participation of the patients and family members in the care process and the reduction of the adverse events related to oral anticoagulant use.

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NOTES

ORIGIN OF THE ARTICLE

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APPROVAL OF RESEARCH ETHICS COMMITTEE

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CONFLICT OF INTERESTS

There is no conflict of interest.

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