ORIGINAL ARTICLE

REVISTA ENFERMAGEM ATUAL IN DERME

# *CONSTRUCTION AND VALIDATION OF A CLINICAL PROTOCOL FOR CHEST PAIN MANAGEMENT IN AN EMERGENCY SERVICE*

# CONSTRUÇÃO E VALIDAÇÃO DE PROTOCOLO PARA ABORDAGEM DA DOR TORÁCICA EM UM SERVIÇO DE EMERGÊNCIA

# *CONSTRUCCIÓN Y VALIDACIÓN DE UN PROTOCOLO PARA EL ABORDAJE DEL DOLOR TORÁCICO EN UN SERVICIO DE EMERGENCIA*

**[1]Karine Regina Reinehr**
**[2]William Campo Meschial**
**[3]Patricia Aparecida Trentin**
**[4]Elisandra Miozzo Zavodnik**
**[5]Fabiana Brum Haag**
**[6]Annie Cordazzo**

[1]Associação Hospitalar Lenoir Vargas Ferreira, Chapecó, SC, Brazil. Orcid: https://orcid.org/0000-0003-4361-2296
[2]Universidade do Estado de Santa Catarina, Chapecó, SC, Brazil. Orcid: https://orcid.org/0000-0002-0678-6126
[3]Confederação Nacional das Cooperativas Médicas, Chapecó, SC, Brazil. Orcid: https://orcid.org/0000-0002-9051-7657
[4]Associação Hospitalar Lenoir Vargas Ferreira, Chapecó, SC, Brazil. Orcid: https://orcid.org/0000-0002-1456-9199
[5]Universidade Federal da Fronteira Sul, Chapecó, SC, Brazil. Orcid: https://orcid.org/0000-0002-1358-766X
[6]Associação Hospitalar Lenoir Vargas Ferreira, Chapecó, SC, Brazil. Orcid: https://orcid.org/0009-0005-9761-036X

**Corresponding Author**
**Karine Regina Reinehr**
Rua Marechal Mascarenhas de Moraes, 300E, Jardim América, Chapecó-SC, Brazil. 898036000. Phone: +55 (49) 991898898
E-mail: karine.regina.kr@gmail.com

**Submission: 13-01-2026**
**Approval: 15-04-2026**

**ABSTRACT**
**Objective:** to develop and validate a clinical protocol for the assessment and initial approach to patients with chest pain. **Methods:** this is a methodological study with a quantitative approach, developed in two stages. In the first stage, an educational technology in the form of a protocol was developed. In the second stage, content validation was conducted using the Content Validation Index method. **Results:** the clinical protocol was developed based on a literature review and current guidelines. Content validation involved 11 nurses and was carried out through focus groups, with a detailed assessment of each protocol item using a Likert scale. There was broad agreement among participants, with validation index values ranging from 0.9 to 1.0 and an overall Content Validation Index of 0.96. **Conclusion:** the validated protocol will enable nurses to systematize and standardize care, guiding them in targeted actions for the management of patients with chest pain in emergency services.
**Keywords:** Chest Pain; Emergency Care Services; Nursing; Clinical Protocols.

**RESUMO**
**Objetivo:** elaborar e validar um protocolo clínico de avaliação e abordagem inicial ao paciente com dor torácica. **Métodos:** trata-se de um estudo metodológico de abordagem quantitativa desenvolvido em duas etapas. Na primeira etapa realizou-se a construção da tecnologia educativa do tipo protocolo e na segunda etapa ocorreu a validação de conteúdo por meio do método de Índice de Validação de Conteúdo. **Resultados:** elaborou-se o protocolo clínico com base em uma revisão de literatura e diretrizes atuais. A validação de conteúdo contou com 11 enfermeiros e ocorreu por meio de grupos focais, com a avaliação pontual de cada item do protocolo utilizando uma escala likert. Obteve-se ampla concordância entre os participantes, com valores de índice de validade que variaram de 0,9 a 1,0 e de Índice de Validação de Conteúdo global de 0,96. **Conclusão:** o protocolo validado possibilitará aos enfermeiros a sistematização e padronização da assistência, orientando-os para ações direcionadas para o atendimento dos pacientes com dor torácica nos serviços de emergência.
**Palavras-chave:** Dor Torácica; Serviços de Atendimento de Emergência; Enfermagem; Protocolos Clínicos.

**RESUMEN**
**Objetivo:** elaborar y validar un protocolo clínico de evaluación y abordaje inicial del paciente con dolor torácico. **Métodos:** se trata de un estudio metodológico con un enfoque cuantitativo desarrollado en dos etapas. En la primera etapa, se llevó a cabo la construcción de la tecnología educativa en forma de protocolo. En la segunda etapa, se realizó la validación del contenido mediante el método del Índice de Validez de Contenido. **Resultados:** el protocolo clínico se elaboró con base en una revisión de la literatura y en directrices actuales. La validación del contenido contó con la participación de 11 enfermeros y se realizó a través de grupos focales, con una evaluación detallada de cada ítem del protocolo utilizando una escala de Likert. Se obtuvo una amplia concordancia entre los participantes, con valores de índice de validez que oscilaron entre 0,9 y 1,0, y un Índice de Validez de Contenido global de 0,96. **Conclusión:** el protocolo validado permitirá a los enfermeros sistematizar y estandarizar la atención, orientándolos hacia acciones dirigidas a la atención de pacientes con dolor torácico en los servicios de emergencia.
**Palabras clave:** Dolor Torácico; Servicios de Atención de Emergencia; Enfermería; Protocolos Clínicos.

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## INTRODUCTION

Chest pain is characterized by a pain sensation or discomfort in the anterior or posterior region of the chest. This complaint accounts for approximately 7.6 million emergency room visits in the United States, making chest pain one of the most frequent reasons for seeking healthcare.[1]

In line with the global scenario, in Brazil, it is estimated that four million patients are treated annually in emergency services complaining of chest pain, of which 10% are diagnosed with Acute Coronary Syndrome (ACS).[2] The patients who present this complaint may report a wide spectrum of associated signs and symptoms, which reflect diverse potential etiologies of chest pain, that are not always related to cardiovascular diseases manifestations and may evolve into a wide variety of clinical outcomes.[3]

In this sense, Cardiovascular Diseases (CVD) represent a group of diseases that can cause chest pain, and their incidence has grown significantly in recent years.[4] According to the "Global Burden of Disease Study" (GBD),(5) the prevalence of CVD in Brazil in 1990 was 6,290/100,000 inhabitants and, in 2017, 6,025 per 100,000 inhabitants, affecting 6% of the population over 20 years old. The incidence rate in 2017 was 687.5 cases per 100,000 inhabitants.[6]

Given the clinical diversity outcomes related to chest pain complaints, a differential diagnosis is complex and, at the same time, essential for initiating appropriate treatment strategies. Consequently, healthcare professionals in emergency settings need to know and recognize these causes and clinical manifestations to identify the risk presented and initiate appropriate clinical management of the patient.[7]

From this perspective, the use of protocols and flowcharts, coupled with continuous training and professional development, constitutes a health technology tool aimed at scientifically grounding the classification and management of chest pain, since the standardization of practices based on scientific evidence minimizes errors in screening, diagnosis, and consequently, treatment.[8,9]

Given these considerations, this study aims to improve the care provided to patients with chest pain in emergency services, specifically in the Emergency Department of a large hospital located in western Santa Catarina, which lacks educational technology focused on serving this patient profile, standardizing the care provided through the construction and validation of a clinical protocol. Accordingly, the objective of this study was to develop and validate a clinical protocol for the initial assessment and management of patients with chest pain.

## Methods

### Study type

This is a methodological study with a quantitative approach, involving the construction

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and validation of a protocol through content validation, conducted between March and September 2024, following the recommendations of the *Revised Standards for Quality Improvement Reporting Excellence* (SQUIRE). Methodological research encompasses studies aimed at developing, validating, and evaluating research instruments, tools or methods, structuring the use of technology geared towards the creation of care protocols or the adaptation of pre-existing instruments to different types of contexts.[10,11]

The protocol validation process is necessary to ensure the safe use of the instrument in clinical practice, as well as to verify whether the primary objectives will be achieved and will adequately and reliably meet the intended purpose of implementation. Content validity, the most widely used method in nursing research, assesses how relevant and appropriate each element of the instrument is for each particular situation through various consensus methods among expert judges.[12]

**Study Participants**

The study population included nurses working in the emergency department of a hospital in western Santa Catarina, for which the protocol was designed. Participant selection, who performed the content validation, took into account criteria such as qualifications in the emergency medicine area, years of experience, and knowledge of the subject matter addressed in this study.

The inclusion criteria were being a nurse working in the emergency department for more than three months and having solid knowledge of the protocol's subject matter. Professionals on leave during the data collection period due to vacation or sick leave were excluded from the study.

Participant recruitment was conducted by convenience sampling by the principal investigator, a nursing resident at the service in question. Initial contact was made with the service coordinator, followed by in-person, individual contact with each participant who met the inclusion criteria and agreed to participate in the study, inviting them to participate in the focus groups. These individuals were included in the study only after agreeing to participate by signing the Informed Consent Form (ICF). It is worth noting that the project for this study was approved by the institution involved.

**Study Protocol**

The first stage in developing the instrument was characterized as an exploratory phase resulting from a literature review to provide a foundation for the protocol's content based on a chosen theoretical framework, guiding its construction through an evidence-based process and ensuring the instrument's quality. For developing the clinical protocol, a narrative literature review was conducted in the context of the initial assessment and chest pain patient management in emergency departments.

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The second stage consisted of an evaluation by the judges, conducted in a simplified manner following informal consensus methods, and finally, content validation for the evaluation of each item in the protocol.[13]

After the preliminary version of the protocol was developed through a literature review, its content was validated by experienced professionals and underwent changes based on data analysis regarding each item that addresses the main pillars of care for this patient profile.

**Data Collection**

The bibliographic data collection and the protocol construction took place between March and June 2024. Validation occurred through focus groups (FG) in July 2024. These meetings are characterized as a team interview conducted through an informal conversation.[14] Prior to the focus groups, the first version of the protocol was sent by email to the specialists so they could read it beforehand and optimize the in-person session.

During the focus group, the protocol was initially presented and reviewed. At this time, the specialists had the opportunity to discuss the content, suggest improvements and changes, which were made in real time by the researcher. Finally, a final reading was conducted to approve the modified version of the protocol and reach a consensus among all participants.

Subsequently, a sociodemographic and professional characterization questionnaire was applied to the participants, along with the protocol validation instrument, which was guided by the punctual evaluation of the items addressed in the educational technology, using a standardized Likert scale (1) Item is not relevant or representative; (2) This item needs extensive revision to be representative; (3) This item needs minor revision to be representative; (4) Item is relevant or representative. The specialists were also able to include justifications for items with which they disagreed or to give their opinion regarding the inclusion and/or exclusion of topics in the evaluated instrument.

**Results analysis and statistics**

The analysis of the collected data was performed using the Content Validity Index (CVI) which defines the level of agreement among specialists on each item addressed in the protocol, considering a value greater than or equal to 0.80 to be valid. Calculating the CVI, the numerator corresponded to the sum of responses “3” and “4” and the denominator to the total number of specialists.

The CVI is a widely used formula for data analysis to validate the content of instruments in the health field, and especially in nursing. It can be defined as the proportion of judges who agree on the relevance of each item to the instrument. The index evaluates items individually or the instrument as a whole, preferably on a 4-point Likert scale.[15]

**Ethical Aspects**

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The research project was submitted to and approved by the Research Ethics Committee with Human Beings of the Chapecó Community University, through the Certificate of Ethical Appraisal Presentation No. 77134523.8.0000.0116. The study respected the ethical precepts foreseen in Resolution No. 466, of December 12, 2012, of the National Health Council, which guides the development of research with human beings. Prior to data collection, the study participants signed the Informed Consent Form, presented in duplicate, one copy retained by the researcher and the other by the participant.

## RESULTS

Developing the clinical protocol, a literature review was conducted in the context of the initial assessment and patients management with chest pain in emergency services. The main theoretical references that underpinned the construction of the protocol were the 2021 guidelines of the Brazilian Society of Cardiology and the 2020 American Heart Association, in addition to protocols implemented by the Heart Hospital (HCor) and the Health Ministry.[16-17-18-19] After the initial version was created, the protocol underwent changes based on participant feedback regarding each item addressed for the care of this patient profile.

For content validation of the material, 13 nurses working in the Emergency Department where the study was conducted were invited, and 11 of them agreed to participate, responding to the data collection instrument. Regarding the sociodemographic and professional characteristics of the participating nurses (Table 1), it was verified that the majority were female (63.63%), predominantly the group was between 20 and 29 years (54.54%), with a mean age of 33.63 ± 9.60 years, ranging from 25 to 52 years.

Regarding experience, it was found that 63.63% of nurses have between 1 and 5 years of experience in the profession and the majority (45.45%) also have between 1 and 5 years of experience in the Emergency and Urgent Care area. It is worth noting that none of the nurses had less than 6 months of experience in the profession.

Regarding qualifications, it was found that 63.63% have a postgraduate specialization (lato sensu) and the remaining 36.36% have completed a health residency program, with the majority (81.81%) of nurses specializing in Emergency and Urgent Care.

**Table 1 -** Sociodemographic and professional characteristics of the participants. Chapeco, 2024.

| Variables | N(%) |
|---|---|
| **Sex** | |
| Male | 4(36,36) |
| Female | 7(63,63) |
| | |
| **Age range (Mean 33.63 ± 9.60)** | |
| 20 a 24 | 3(27,27) |

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| | |
|---|---|
| 25 a 29 | 3(27,27) |
| 30 a 34 | 0(00,00) |
| 35 a 39 | 2(18,18) |
| 40 or more | 3(27,27) |
| **Years of experience as a nurse** | |
| 1 a 5 years | 7(63,63) |
| 5 a 10 years | 2(18,18) |
| More than 10 years | 2(18,18) |
| **Time spent working in the Emergency Department of the current Service** | |
| Less than 6 months | 1(09,09) |
| 6 months to 1 year | 2(18,18) |
| 1 to 5 years | 5(45,45) |
| 5 to 10 years | 2(18,18) |
| More than 10 years | 1(09,09) |
| **Highest Title** | |
| Postgraduate lato sensu | 7(63,63) |
| Residence | 4(36,36) |
| **Specialization in Urgent and Emergency Care** | |
| Yes | 9(81,81) |
| No | 2(18,18) |

Based on the responses from the specialist nurses, the Validity Index (VII) was calculated for each topic of the evaluated protocol. The VII ranged from 0.9 to 1.0, resulting in an overall VII of 0.96 (Table 2). The results obtained indicated good agreement between the items evaluated by the specialists, with all items addressed in the protocol being considered valid by the participants.

**Table 2 -** Validation of the Protocol according to the Content Validity Index (CVI), Chapeco, 2024

| Protocol Topics | CVI |
|---|---|
| Introduction | 1,00 |
| Justification | 0,90 |
| Scope | 0,90 |
| Purpose | 1,00 |
| Definitions and Classifications | 1,00 |
| Initial Assessment and Management | 0,95 |
| Electrocardiogram | 0,95 |
| Diagnostic Methods | 0,90 |
| Risk Stratification Scales | 0,95 |
| Differential Diagnosis | 1,00 |
| Treatment of Chest Pain/ACS | 1,00 |
| Care Flowchart | 1,00 |
| **Global CVI** | **0,96** |

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## DISCUSSION

The development of evidence-based clinical protocols that support the care practice of nurses in emergency services is crucial in ensuring the effectiveness of user care.[20] Thus, as established by Law No. 7,498, of June 25, 1986, which regulates nursing practice, the nurse's essential role is to integrate into health teams, participate in the development, implementation, and evaluation of health care plans, including nursing prescriptions and the implementation of protocols, actions that aim to guarantee the comprehensiveness and care quality.[21]

The nursing professionals who participated in the content validation contributed a more specialized perspective to integrate, align and qualify the actions to be developed, especially in relation to the proposed care flowchart. These participants were selected entirely because they work in the emergency service for which the protocol was developed. In addition to most of them having specialized training in the area of Urgent and Emergency Care, they also contributed their extensive experience in caring for the patient profile in question.

On the other hand, validation through the Content Validity Index (CVI) with specialist nurses was chosen as the method of choice due to its broad applicability in the health field and for guaranteeing a high level of congruence with the developed instrument. It was observed that several current studies use the CVI-based validation method, obtaining results that support the implementation of effective educational technologies in various areas of health care [22].

Care protocols emerge as a useful tool to promote the organization of services and the work process of the multidisciplinary team, reducing care time and facilitating the identification of risk factors and emergent situations. Furthermore, the support of standardized guidelines gives nurses a certain autonomy, positioning nurses as key professionals in coordinating the care pathway, enabling humanized care and, above all, contributing to patient safety.[23]

Thus, the use of these protocols helps not only by avoiding unnecessary hospitalizations or premature discharges, but also by supporting decision-making for the best therapeutic approach to be implemented by the entire healthcare team from the moment of admission and triage. Specifically, the implementation of the chest pain protocol gives the nurse significant autonomy to conduct the initial care of these patients. As the first point of contact, the nurse can indicate the need for an electrocardiogram (ECG), reducing the time to medical diagnosis and the start of appropriate treatment, especially in cases of acute coronary syndrome (ACS). These actions make the nurse an active participant in the best clinical outcome for these patients.[23]

Furthermore, the care protocol and flowchart also assists in the accurate identification of typical and atypical symptoms of ACS. This correct identification is crucial to

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avoid incorrect and inaccurate diagnoses and consequently inadequate treatment. Additionally, it is important that the protocol presents clear guidelines for patient management at different levels of clinical instability, guidelines for the correct administration of medications, procedures, and medical instructions that should be known by the entire team. This, in turn, contributes to the rapid stabilization of patients because the entire team is aware of the therapeutic approaches to be implemented. [24]

From this perspective, adherence to care protocols positively impacts patient survival and reduces mortality in cases of acute coronary syndrome (ACS). Research indicates a reduction in coronary events in situations where acute coronary syndrome (ACS) is effectively treated through care protocols, making it important that the professionals involved are trained to manage cardiovascular emergencies.[25]

Thus, the nurse plays a fundamental role in the care of patients with chest pain, implementing actions aimed at promoting effective care and, above all, managing their team in the approach to be taken. It is known that for excellence in emergency services, it is necessary to have agile, efficient and qualified professionals to systematize diagnostic and therapeutic strategies in the initial care of patients with cardiovascular problems.[9] Accordingly, to achieve highly qualified care, constant updating of knowledge and training of the entire team involved in care is necessary

A study conducted in the state of Paraná analyzed the knowledge of nursing professionals working in emergency services regarding the use of a chest pain protocol. The results showed a moderate level of knowledge among the nursing team about the tool, and it was possible to identify that the number of people who had not received training for its implementation is very close to the percentage of errors in recognizing various alarm factors and typical signs and symptoms of acute coronary syndrome (ACS). These results demonstrate the importance of conducting periodic training sessions with nursing teams working in cardiovascular emergencies, in order to provide adequate care and ensure the best possible clinical outcome.[26]

In addition to providing healthcare, nurses also play an essential role in continuing education and training of healthcare teams. When implemented in emergency and urgent care services, continuing education in healthcare fosters the development of skills and abilities that contribute to the provision of excellent service.[9] Protocols and flowcharts can be great allies in training and standardizing teamwork actions; however, building and making available high-quality guidelines is no guarantee that the proposed practices will be adopted in daily care. Therefore, it is necessary to adopt implementation strategies with active and effective methodologies.[27]

Although the importance of transforming knowledge into action and using the best available evidence to support clinical practice is

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widely recognized, it still represents a challenge for most healthcare services at different levels. In light of this, identifying barriers, facilitating factors, and analyzing the context in which one is initially situated can be an important tool for implementing guidelines and different teaching methodologies, thus positively impacting adherence and the appropriate use of protocols and flowcharts implemented in the service.[27]

For this reason, to ensure the effectiveness of these processes, in addition to the continuous training of professionals, there is a clear need for the adequate maintenance of human and material resources, organization and guidance of the population to reduce overcrowding in emergency services, among other factors that directly influence the performance and applicability of care protocols.[23]

It is known that the implementation of protocols and flowcharts would not be able to resolve the overload of services and the lack of adequate network structuring and other conditions that compromise the quality of care. However, their use can mitigate the failures that compromise patient safety and facilitate the prioritization and identification of the most urgent situations.[28]

The limitations encountered in the development of this study mainly include the low engagement of participants in the research, which may have impacted the diversity and depth of contributions to the adaptation of the proposed clinical protocol. The shy participation of nurses hindered the identification of more refined adjustments, potentially generating bias in the adaptation to the real needs of the service where it will be implemented. However, the tool developed is considered to meet the main needs in terms of workflow organization and scientific support for the actions undertaken. Furthermore, the next stage of practical application will allow for the identification of any necessary modifications, ensuring that the protocol remains under constant improvement.

This study enabled the construction and validation of a protocol for the initial assessment and management of chest pain in an emergency department, addressing a service need and promoting standardization of care for these patients. The implementation of this instrument will contribute to the triage, diagnosis, and early treatment of patients facing imminent cardiovascular emergencies, increasing service efficiency and improving the survival of patients seeking care with this complaint. Therefore, in addition to the construction and validation of a clinical protocol, this study sought to reinforce the importance of using standardized, evidence-based guidelines to ensure higher quality and speed of care.

## CONCLUSION

Nursing care for patients seeking emergency treatment with complaints of chest pain can be challenging and sometimes complex. Therefore, it is essential that nurses constantly seek to update their scientific knowledge, as prompt and qualified care is a crucial factor in

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the patient's final clinical outcome. From this perspective, care technologies, including clinical protocols, have proven to be an effective tool in standardizing care, ensuring speed, effectiveness, quality, and safety in the care provided.

The instrument developed in this study will enable nurses to systematize and standardize care, guiding them towards precise and targeted actions for the care of patients with chest pain, prioritizing needs and providing quick and effective interventions, especially in cases of acute coronary syndrome (ACS). Furthermore, this protocol and its applicability by the nursing team will bring greater visibility and support to nurses in the emergency department, positioning them as key players in the initial care of major cardiovascular emergencies.

The results obtained in the content validation of the protocol showed broad agreement among the participants. The Content Validity Index (CVI) values in relation to the evaluation of each topic addressed in the protocol ranged from 0.9 to 1.0, with an overall CVI of 0.96. To reinforce the importance of the topic addressed, further research is suggested related to the construction, validation, and implementation of clinical protocols concerning various therapeutic approaches that are not yet standardized in different health services, especially in the area of urgency and emergency, where the actions taken require speed and assertiveness.

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**Funding and Acknowledgments:**

The research received no funding.

**Data availability statement**

No datasets were generated in this study. The information presented is described in the body of the article.

**Conflict of interest statement**

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Manuscript derived from the residency capstone project titled “Construction and validation of a protocol for the management of chest pain in an emergency service,” defended in 2024 within the Uniprofessional Nursing Residency Program in Urgency and Emergency Care at the Lenoir Vargas Ferreira Hospital Association (ALVF/HRO).

**Authorship criteria (author contributions)**

1. Karine Regina Reinehr: made substantial contributions to the conception and planning of the study, data analysis and interpretation, and approval of the final version.

2. William Campo Meschial: made substantial contributions to the conception and planning of the study, data analysis and interpretation, and approval of the final version.

3. Patricia Aparecida Trentin: participated in data collection, drafting the article, and critical review.

4. Elisandra Miozzo Zavodnik: participated in the approval of the final version of the article.

5. Fabiana Brum Haag: participated in the approval of the final version of the article.

6. Annie Cordazzo: participated in the approval of the final version of the article.

**Scientific Editor:** Ítalo Arão Pereira Ribeiro.
ORCID: https://orcid.org/0000-0003-0778-1447