

ORIGINAL ARTICLE

**Hospital Epidemiology Units in Brazil: an integrative literature review**

*Núcleos Hospitalares de Epidemiologia no Brasil: uma revisão integrativa de literatura*  
*Unidades de Epidemiología Hospitalaria en Brasil: una revisión integradora de la literatura*

Rodrigo Faria Dornelas<sup>1</sup> ORCID 0000-0002-4466-2503

Ana Luiza Lima Sousa<sup>1</sup> ORCID 0000-0002-7566-3541

<sup>1</sup>*Universidade Federal de Goiás, Goiânia, Goiás, Brazil.*

Address: R. 235, s/n - Setor Leste Universitário, Goiânia, Goiás, CEP 74605-050.

Email: rodrigodornelas11@hotmail.com

Submitted: 11/27/2023

Accepted: 06/1/2024

**ABSTRACT**

**Background and Objectives:** the activities of epidemiological surveillance within hospital settings assume diverse structures and work processes according to different regions. This study aimed to map the studies conducted on the structure and/or processes of Hospital Epidemiology Units in Brazil. **Methods:** this is an integrative literature review conducted in the PubMed, Virtual Health Library (VHL), Brazilian Digital Library of Theses and Dissertations (BDTD), and CAPES Journals databases, using predefined descriptors. The search covered the period from 1971 to 2022. The construction of this study was guided by checklist items and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis elaboration. The process of selecting and organizing study inclusion and exclusion was carried out through the Rayyan application. **Results:** eighteen studies were identified using controlled descriptors (Epidemiologic Surveillance Services; Hospitals; and Health Evaluation) in the selected databases, distributed across ten federal units. Regarding the searches for studies on Hospital Epidemiology Units, we came across studies on other subjects that do not necessarily provide information on the functioning or systematic nature of the organization. These studies present as their object, for instance, the illnesses reported by the unit. **Conclusion:** it was identified that the studies address topics such as notification and investigation of diseases and injuries, and active search. Some even verticalize analyses on integration between sectors within hospital settings and in the external care network. However, there are few studies that analyze the performance of the units – analysis of processes and outcomes.

**Keywords:** *Epidemiology. Epidemiological Surveillance Services. Hospitals. Health Assessment. Hospital Epidemiology Unit.*

**RESUMO**

**Justificativa e Objetivos:** as atividades de vigilância epidemiológica dentro de ambientes hospitalares assumem estruturas e processos de trabalho diversificados segundo as diferentes regiões. Este estudo teve como objetivo mapear os estudos realizados sobre estrutura e/ou processos dos Núcleos Hospitalares de Epidemiologia no Brasil. **Método:** trata-se de revisão integrativa da literatura realizada nas bases de dados PubMed,

Biblioteca Virtual em Saúde (BVS), Biblioteca Digital Brasileira de Teses e Dissertações (BDTD) e Periódicos CAPES, usando descritores pré-definidos. A busca compreendeu o período de 1971 a 2022. A construção deste estudo foi guiada pelos itens de checagem e elaboração do *Preferred Reporting Items for Systematic Reviews and Meta-Analysis*. O processo de seleção e organização da inclusão e exclusão das publicações foi realizado por meio do aplicativo Rayyan. **Resultados:** foram identificados 18 estudos, utilizando-se descritores controlados (*Epidemiologic Surveillance Services; Hospitals; Health Evaluation*) nas bases de dados selecionadas, distribuídos em dez Unidades Federativas. Em relação às buscas por publicações sobre os Núcleos Hospitalares de Epidemiologia, deparamo-nos com estudos sobre outros assuntos que não necessariamente informam sobre o funcionamento ou sistemática de organização. Estes apresentam como objeto, por exemplo, os agravos notificados pelo núcleo. **Conclusão:** foi identificado que os estudos abordam temas como notificação e investigação de doenças e agravo, e busca ativa. Alguns ainda verticalizam análises sobre integração entre setores dentro do ambiente hospitalar e na rede de assistência externa. No entanto, são escassos estudos que analisassem a atuação dos núcleos – análise de processos e resultados.

**Descritores:** *Epidemiologia. Serviços de Vigilância Epidemiológica. Hospitais. Avaliação em Saúde. Núcleo Hospitalar de Epidemiologia.*

## ABSTRACT

**Background and Objectives:** the activities of epidemiological surveillance within hospital settings assume diverse structures and work processes according to different regions. This study aimed to map the studies conducted on the structure and/or processes of Hospital Epidemiology Units in Brazil. **Methods:** this is an integrative literature review conducted in the PubMed, Virtual Health Library (VHL), Brazilian Digital Library of Theses and Dissertations (BDTD), and CAPES Journals databases, using predefined descriptors. The search covered the period from 1971 to 2022. The construction of this study was guided by checklist items and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis elaboration. The process of selecting and organizing study inclusion and exclusion was carried out through the Rayyan application. **Results:** eighteen studies were identified using controlled descriptors (*Epidemiologic Surveillance Services; Hospitals; and Health Evaluation*) in the selected databases, distributed across ten federal units. Regarding the searches for studies on Hospital Epidemiology Units, we came across studies on other subjects that do not necessarily provide information on the functioning or systematic nature of the organization. These studies present as their object, for instance, the illnesses reported by the unit. **Conclusion:** it was identified that the studies address topics such as notification and investigation of diseases and injuries, and active search. Some even verticalize analyses on integration between sectors within hospital settings and in the external care network. However, there are few studies that analyze the performance of the units – analysis of processes and outcomes.

**Keywords:** *Epidemiology. Epidemiological Surveillance Services. Hospitals. Health Assessment. Hospital Epidemiology Unit.*

## RESUMEN

**Justificación y Objetivos:** las actividades de vigilancia epidemiológica en entornos hospitalarios asumen estructuras y procesos de trabajo diversos según las diferentes regiones. Este estudio tuvo como objetivo mapear los estudios realizados sobre la

estructura y/o procesos de los Núcleos de Epidemiología Hospitalaria en Brasil. **Métodos:** se trata de una revisión integrativa de la literatura realizada en las bases de datos PubMed, Biblioteca Virtual en Salud (BVS), Biblioteca Digital Brasileña de Tesis y Disertaciones (BDTD) y Periódicos CAPES, utilizando descriptores predefinidos. La búsqueda abarcó el período de 1971 a 2022. La construcción de este estudio fue guiada por los elementos de verificación y elaboración del *Preferred Reporting Items for Systematic Reviews and Meta-Analysis*. El proceso de selección y organización de la inclusión y exclusión de las publicaciones se llevó a cabo a través de la aplicación Rayyan. **Resultados:** se identificaron 18 estudios utilizando los descriptores controlados (*Epidemiologic Surveillance Services; Hospitals; Health Evaluation*) en las bases de datos seleccionadas, distribuidos en diez Unidades Federativas. En relación a las búsquedas de publicaciones sobre Centros Hospitalarios de Epidemiología, encontramos estudios sobre otros temas que no necesariamente aportan información sobre el funcionamiento o la sistemática de la organización. Estos presentan como objeto, por ejemplo, los problemas notificados por el núcleo. **Conclusión:** se identificó que los estudios abordan temas como notificación e investigación de enfermedades y lesiones, y búsqueda activa. Algunos incluso verticalizan los análisis sobre la integración entre sectores del entorno hospitalario y la red asistencial externa. Sin embargo, son pocos los estudios que analizan el desempeño de los centros – análisis de procesos y resultados.

**Palabras Clave:** *Epidemiología. Servicios de Vigilancia Epidemiológica. Hospitales. Evaluación de la Salud. Núcleo Hospitalario de Epidemiología.*

## INTRODUCTION

Epidemiological surveillance has a history dating back to the 19<sup>th</sup> century, and was limited to data collection, compilation, assessment and dissemination to health authorities and the general public, with the main objective of early detection of patients with a view to their isolation.<sup>1</sup>

The expansion of epidemiological surveillance actions to the hospital level began with Ordinance 2,529 of November 2004, which created the Brazilian National Subsystem of Epidemiological Surveillance in hospital settings and, thus, paved the way for implementing Hospital Epidemiology Units (HEU) as a way of optimizing health surveillance actions from the hospital context, with elements already inherent to epidemiological surveillance, including data collection and processing activities, data analysis and interpretation, recommendation of prevention and control measures, promotion of prevention and control actions, assessment of the effectiveness of the measures adopted and dissemination of relevant information.<sup>2,3,4</sup>

In 2010, through Ordinance MoH/MO 2,254 of August 5, 2010, Hospital Epidemiological Surveillance (HES) was established within the Brazilian National Health Surveillance System (SNVS - *Sistema Nacional de Vigilância em Saúde*). Its purpose was

to define an initial network of national reference hospitals for developing epidemiological surveillance actions in hospital settings.<sup>3</sup>

HEU are structures created to carry out epidemiological surveillance in hospitals and health units. The main objective of these units is to ensure the development of epidemiological surveillance activities in hospital health settings, preventing and controlling diseases, health problems and events (DHE) and other hospital infections. They are made up of healthcare professionals with experience and/or training in public health who work in an articulated manner, aiming to detect, report and investigate illnesses, in close coordination with the Brazilian National Public Health Emergency Alert and Response Network (CIEVS Network) as well as the detection of deaths of women of childbearing age, declared maternal deaths, infant and fetal deaths, deaths from infectious diseases and from ill-defined causes. Thus, they carry out activities such as data collection and analysis, DHE and infection outbreak identification, prevention measure implementation and suspected case investigation.<sup>5</sup>

The activities developed by HEU, within hospital settings, assume structures and work processes guided by guiding ordinances to be developed. Every unit should act by reporting and investigating diseases and injuries through active search, data consolidation, analysis and dissemination of information, promotion of control actions, in addition to assessment of the efficacy and effectiveness of the measures adopted, promotion of integration between key sectors of the hospital and timely monitoring.<sup>6-7</sup>

It is important to understand HEU, demonstrating their performance within hospital units and how their production can reflect on local managers' decision-making and on the knowledge of emerging diseases faster and accurately.

This work aims to map the studies carried out on the structure and/or processes of HEU in Brazil. Carrying out an integrative review on the topic can help identify situations within the units with their connections and divergences.

## **MÉTODOS**

This is an integrative literature review to map studies on HEU. The types of studies included in the study were full articles published in indexed journals, dissertations and theses. The search period considered was from 1971 to 2022, filtered in the PubMed, Virtual Health Library (VHL), Brazilian Digital Library of Theses and Dissertations (BDTD) and CAPES Journals (CAFe access) databases, using defined strategies, according to Chart 1. The filters used in the databases to search for descriptors were the

title or, in the abstract, the descriptors indexed in the aforementioned databases. The studies were exported on December 21, 2022.

The construction of this study was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA 2020) checking and preparation items, aiming to increase the quality and reliability of the information obtained.

Studies that assessed the structure and/or processes and/or outcomes of HEU in Brazil were included. Therefore, articles that studied communicable and non-communicable diseases and injuries, hospital infections and other situations that do not constitute HEU structuring were excluded.

The categorization of studies available in the databases used in the study was carried out by a researcher with experience in HES, using the online platform Rayyan.

The following DeCS terms were used with the combined search strategies and the Boolean operators OR and AND (Chart 1):

**Chart 1.** Method for searching journals in databases with controlled descriptors

METHOD			
Database	Controlled descriptors	Search strategy	Number of studies retrieved
PubMed	Epidemiologic Surveillance Services	((Epidemiologic Surveillance Services) AND (hospitals)) AND (Health Evaluation)	353
	Hospitals		
	Health Evaluation		
VHL	Epidemiology/Epidemiologic Surveillance Services	(Epidemiology) OR (Epidemiologic Surveillance Services) AND (hospitals) AND (Health Evaluation)	198
	Hospitals		
	Health Evaluation		
BDTD	<i>Epidemiologia/Serviços de Vigilância</i>	All fields: <i>Epidemiologia</i> OR All fields: <i>Serviços de Vigilância Epidemiológica</i> AND (All fields: <i>Hospitais</i> ) AND (All fields: <i>Avaliação em Saúde</i> )	160
	<i>Epidemiológica</i>		
	<i>Hospitais</i>		
	<i>Avaliação em Saúde</i>		
CAPES JOURNALS	Epidemiologic Surveillance Services	Any field contains Epidemiologic Surveillance Services and any field contains Hospitals and any field contains Health Evaluation	647
	Hospitals		
	Health Evaluation		
Total			1,358

The descriptors used in the BDTD platform were inserted in Brazilian Portuguese, as this was more successful in locating available studies.

The process of selecting and organizing the inclusion and exclusion of articles was carried out using Rayyan application, where titles and abstracts were read, duplicates were excluded, the reasons for exclusion were categorized, and the articles were selected for full reading.

An Excel spreadsheet was created to extract data from articles selected for full reading with the following variables: study title; authors; journal name and year of publication; study period; study location; study focus (structure, process or outcome); objective; and study considerations.

Versão para Tradução

## RESULTS AND DISCUSSION

All studies (n=1,358; 100%) found through database analysis were exported to Rayyan to exclude duplicates (n=94; 6.92%). After reading the title and abstract, another 1,099 (80.93%) were excluded because they did not match the study objective. Others (n=06, 0.44%) were excluded because they were not available for reading in full. And 159 (11.71%) articles remained for full reading, as shown in Table 1.

After reading the selected articles in full (n=159), we excluded 152 because they were not consistent with the proposed objective. In order to meet the study objective, seven studies were included (Table 1).

We listed the reasons for exclusion of articles after reading titles and abstracts, as observed in the PRISMA flow diagram (Chart 2). We verified studies that had as their research object diseases, injuries and events in public health, and chronic non-communicable illnesses accounted for n=462 (42.2%) of reasons for exclusion.

**Table 1.** Refinement of analysis performed after exporting articles to the databases

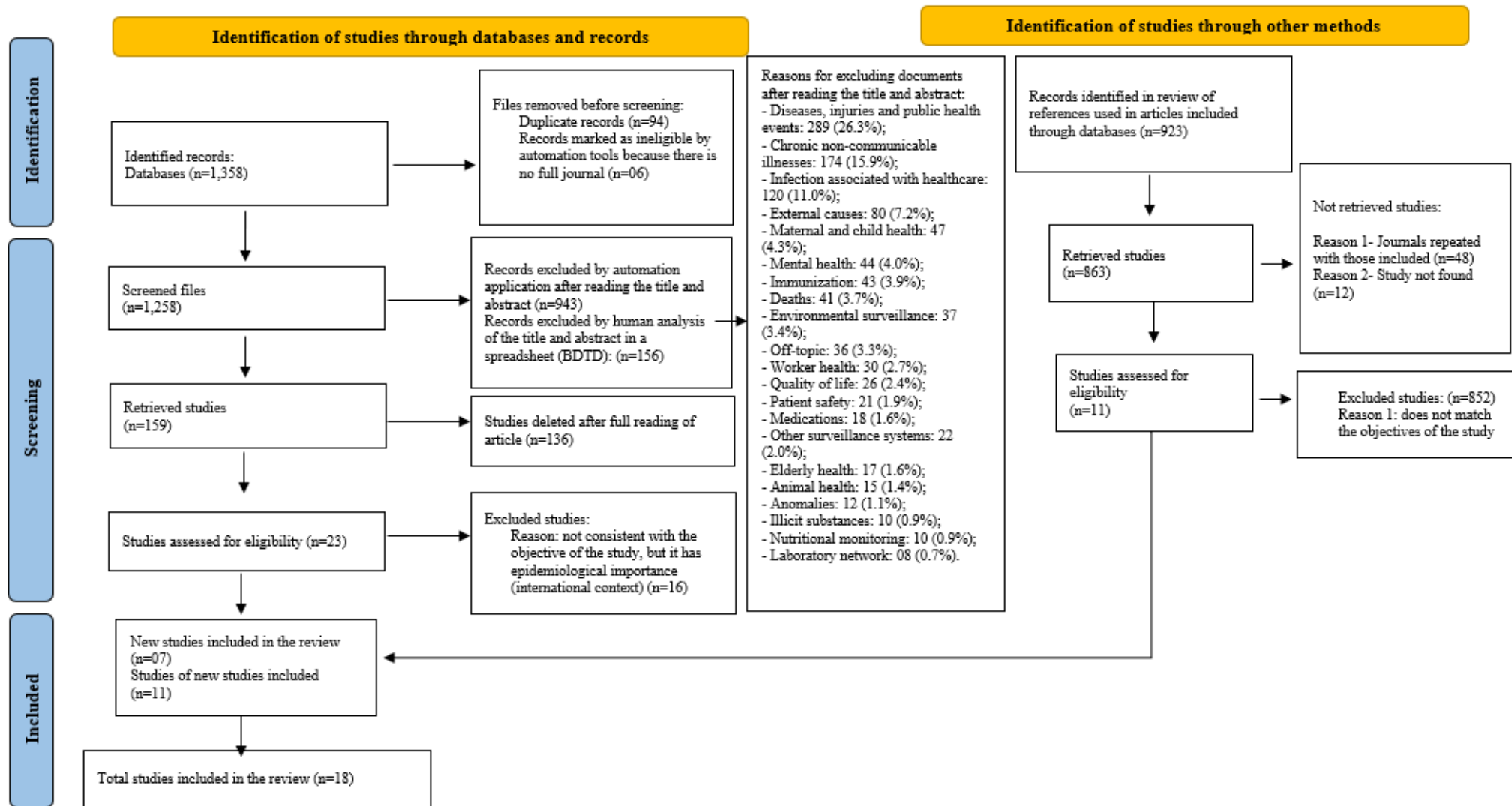
Result of automated analysis by Rayyan application	Number of studies
Total studies	1,358
Studies excluded due to duplication	94
Studies excluded due to articles not being available in full	06
Studies excluded after reading titles and abstracts	1,099
Studies excluded after reading full text	136
Studies excluded because they do not address Hospital Epidemiological Surveillance (international scenario)	16
Studies included	07

**Source:** prepared by the author (2023).

In order to identify studies through other methods and further refine the search, the bibliographic references of the seven studies included in database analysis were checked. Thus, we identified 923 bibliographic reference records. After analyzing these references, 11 studies that met the study objectives were eligible, as observed in the PRISMA flow diagram presented in Chart 2.

The PRISMA flow diagram shows that the number of journals reviewed in this process totaled 2,281 records. Eighteen studies were included, identified in the sum of the following search strategies: databases (n=07) and other methods (bibliographic references of articles) (n=11). As this is an integrative review, this research was not submitted to a Research Ethics Committee (REC).

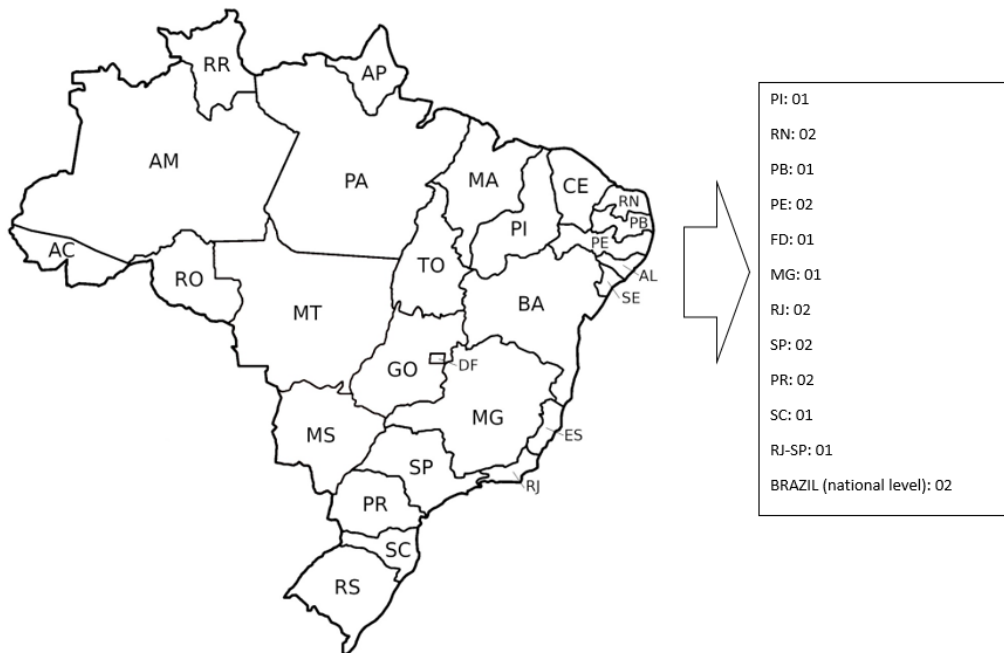




Source: adapted from McKenzie *et al.*<sup>13</sup>

Figure 1. PRISMA 2020 flow diagram: Hospital Epidemiology Units: an integrative literature review

In accordance with the study objectives, 18 studies were included in this integrative review (Figure 2; Chart 3), which can therefore be distributed within the Federative Units (Figure 2).



**Figure 2.** Distribution of the 18 studies included in the review at national level  
**Source:** prepared by the author.

**Chart 2.** Distribution of included studies according to title, authors, journal and year of publication, study period, study location, study focus, objective and considerations

Study title	Authors	Journal (year of publication)	Study period	Study location	Study focus	Objective	Considerations
<i>Núcleos de epidemiologia em hospitais de alta complexidade da rede pública de saúde situados no Recife, Pernambuco: avaliação da implantação</i>	Mendes, Freese, Guimarães <sup>14</sup>	<i>Revista Brasileira de Saúde Materno Infantil</i> (2004)	2000	Recife	S/P	Assess the degree of implementation of epidemiology units in seven highly complex hospitals in the public health network located in Recife.	During the implementation process of HEU, there are moments of progress and setbacks, influenced by contextual factors. In most of them, there are deficiencies in the physical and material structure, compromising their operation. One of the main obstacles to the implementation and operation of HEU is related to the lack of human resources as well as the need for training.
<i>Avaliação da implantação dos núcleos hospitalares de epidemiologia</i>	Oliveira <i>et al.</i> <sup>15</sup>	<i>Revista de Enfermagem UFPE online</i> (2019)	2016	Piauí	S/P	Assess HEU implementation.	In general, all of them have made progress in carrying out active searches, data processing and investigation of notifiable diseases (ND). However, despite the positive results in terms of increasing the number of notifications, some institutions still have gaps in carrying out passive searches, and the data, even though consolidated, are not disclosed in a way that allows for timely intervention.

<i>Três décadas de epidemiologia hospitalar e o desafio de integrar a Vigilância em Saúde: reflexões a partir de um estudo de caso</i>	Escosteguy, Pereira, Medronho <sup>16</sup>	<i>Ciência &amp; Saúde Coletiva</i> (2017)	2017	Rio de Janeiro	S/ P/ O	Report the experience of implementing and deploying the epidemiology service/HFSE.	The epidemiological surveillance routine is fully structured. The service is part of the Hospital Epidemiological Surveillance Network (REVEH - <i>Rede de Vigilância Epidemiológica Hospitalar</i> ) of national interest, and plays an important role as a reporting unit within the municipality and the state.
<i>Avaliação do Subsistema Nacional de Vigilância Epidemiológica em Âmbito Hospitalar no estado de Pernambuco, Brasil</i>	Siqueira Filha, Vanderlei, Mendes <sup>17</sup>	<i>Epidemiologia e Serviços de Saúde</i> (2011)	2008	Pernambuco	S/P	Assess the degree of implementation of HEU that make up the Reference Hospital Network in Pernambuco.	The study highlights the need to implement policies for hiring and retaining qualified professionals, publicizing HEU activities in hospitals and in the epidemiological surveillance subsystem itself, expanding and increasing efficiency in the use of financial resources, and creating mobilization strategies to promote greater integration and exchange of successful experiences among HEU.
<i>Vigilância epidemiológica e avaliação da atenção hospitalar à meningite</i>	Escosteguy <i>et al.</i> <sup>20</sup>	<i>Revista de Saúde Pública</i> (2004)	1986 to 2022	Rio de Janeiro	P	Analyze the clinical-epidemiological profile and predictors of in-hospital death of patients with infectious meningitis admitted to a public hospital.	Epidemiological surveillance operating at the hospital level was able to provide feedback to services with care indicators, making the use of the Notifiable Diseases Information System (SINAN - <i>Sistema de Informação de Agravos de Notificação</i> ) at this level pertinent.
<i>Diagnóstico situacional da capacidade de resposta da rede hospitalar de emergência a eventos associados a viajantes internacionais em cidade-sede da Copa de 2014: estudo de caso de Brasília</i>	Santos <sup>22</sup>	Dissertation (Master's in Public Health Epidemiology) (2013)	2013 to 2014	Brasília	S/ P/ O	Conduct a situational diagnosis of the response capacity of hospitals in the emergency network of Brasília to diseases, injuries and events requiring immediate mandatory notification of national and international interest.	After analysis, it was found that, of the 2,570 events reported to SINAN, less than 1% (0.4) were reported to CIEVS through the Public Health Event Monitoring System (SIME - <i>Sistema de Monitoramento de Eventos em Saúde Pública</i> ).
<i>Avaliação da Rede de Núcleos Hospitalares de Epidemiologia do Estado de São Paulo</i>	Cardozo <sup>23</sup>	Dissertation (Master's in Public Health) (2018)	2017 a 2018	São Paulo	S/ P/ O	Describe and assess the HEU network in the state of São Paulo, from a structural point of view, with a focus on human resources and processes.	The HEU network assessment in the state of São Paulo was generally favorable regarding the process. Although the structural analysis was less favorable, as 15 HEU were classified as partially adequate, the majority had an adequate process. This study points to the need for adaptation of some HEU regarding the composition and workload of the team and suggests that discussions with the teams about the important role of producing analytical reports and using work process management tools.

<i>Avaliação do Subsistema de Vigilância Epidemiológica em Âmbito Hospitalar – Rede de Núcleos Hospitalares de Epidemiologia do Estado de São Paulo</i>	Luna <i>et al.</i> <sup>24</sup>	Dissertation (Master's in Public Health) (2013)	2006 to 2011	São Paulo	S/P	Assess the epidemiological surveillance system in hospital settings – HEU network.	The implementation of the HEU network in hospitals improved the capture and investigation of cases of diseases subject to mandatory notification to the state surveillance system, however some activities in certain units can be improved.
<i>Clima organizacional e satisfação laboral: um estudo sobre os Núcleos Hospitalares de Epidemiologia de Natal/RN</i>	Matias <sup>25</sup>	Dissertation (Master's in Nursing) (2010)	2010	Natal	S/P	Identify the relationship between the organizational climate in the regulated HEU in the city of Natal and job satisfaction of the professionals who work there.	It is suggested that studies be carried out to verify how organizational culture, as an expressive internal factor, influences the establishment of the HEU's organizational climate and, consequently, the level of job satisfaction and individual well-being of its team members.
<i>Conhecimento do enfermeiro sobre as ações de vigilância epidemiológica no hospital Universitário Onofre Lopes, Natal, RN</i>	Ribeiro <sup>9</sup>	Dissertation (Master's in Nursing) (2010)	2010	Natal	P	Verify nurses' knowledge about the epidemiological surveillance actions at the <i>Hospital Universitário Onofre Lopes</i> (HUOL), in the city of Natal, state of Rio Grande do Norte.	Given the difficulties presented, it becomes important to recommend educational processes with a strategy for transforming practices, in addition to proposing actions in light of the principle of comprehensiveness, enabling agile and effective responses, in accordance with the purpose of HES, in the face of current epidemiological emergencies.
<i>O processo de trabalho de enfermeiros em Núcleos Hospitalares de Epidemiologia</i>	Medeiros <i>et al.</i> <sup>26</sup>	<i>Cogitare Enfermagem</i> (2014)	2012	Curitiba	S/P	Characterize HEU nurses' work process in terms of agents, purpose, means and instruments, object and products.	It was concluded that professional practice, in these units, must break with the task-centered model of action towards a model articulated with reference services and that contributes to the construction of public policies aligned with the health needs of the population.
<i>Contribuição do Núcleo de Vigilância Epidemiológica em uma Unidade de Pronto Atendimento para a Notificação Compulsória de Agravos</i>	Dantas <i>et al.</i> <sup>7</sup>	<i>Revista Brasileira de Ciências da Saúde</i> (2014)	2012 to 2014	João Pessoa	O	Demonstrate the contribution of the Epidemiological Surveillance Unit (ESU) actions of a 24-hour Emergency Care Unit (ECU) in the city of João Pessoa, PB.	The implementation of an ESU in an ECU presents a concrete contribution to the epidemiological surveillance system due to the possibility of increasing sensitivity and timeliness in detecting diseases that require compulsory notification.
<i>Notificações de doenças compulsórias e dos agravos em um hospital Universitário de Minas Gerais, Brasil</i>	Silva <i>et al.</i> <sup>27</sup>	<i>Revista de Enfermagem da UFSM</i> (2014)	2011 to 2012	Montes Claros	O	Analyze the notifications of compulsory diseases and the injuries recorded in a university hospital in northern Minas Gerais.	The study provided information on the epidemiological situation in the areas where they occur.

<i>Núcleos Hospitalares de Vigilância Epidemiológica no Brasil: uma revisão integrativa de literatura científica</i>	Lima <i>et al.</i> <sup>28</sup>	<i>Revista de Epidemiologia e Controle de Infecção</i> (2019)	2007 to 2017	Senhor do Bonfim	S/P	Assess, based on a literature review, the functioning of ESU in Brazil.	HEU stand out as a reference sector for carrying out compulsory notification and for managing situations involving notifiable diseases and diseases within hospital settings. Non-compliance with the requirements and competencies established in Ordinance 2,529/2004 was verified.
<i>Vigilância em Saúde na atenção terciária: um estudo sobre os Núcleos Hospitalares de Epidemiologia</i>	Piccoli <sup>29</sup>	Dissertation (Master's in Nursing) (2015)	2015	Florianópolis	S/P/O	Highlight the surveillance actions developed by HEU in the Greater Florianópolis region, SC, and their articulation with other levels of healthcare.	HEU stands out as a reference sector for carrying out compulsory notification and for managing situations of communicable diseases, unusual diseases and emerging and re-emerging diseases, overcoming the barriers of hospital settings and playing an important role in communication between the points of the Healthcare Network.
<i>Subnotificação das doenças de notificação compulsória no contexto hospitalar</i>	Griep <sup>30</sup>	Dissertation (Master's in Nursing) (2003)	2001	Cascavel	S/P	Identify, through historical analysis, the main elements that underpinned epidemiology as a science, addressing aspects of this as a basis for the development of epidemiological surveillance actions for communicable diseases in the country.	The implementation of a continuing training program at local and municipal level complements the need for training and updating as well as providing an opportunity to discuss cases and data from reality, with the aim of adopting joint measures to address the epidemiological situations presented.
<i>Vigilâncias hospitalar: possibilidades e obstáculos de uma prática integrada</i>	Schettert <sup>31</sup>	Thesis (Doctoral in Public Health) (2008)	2007	São Paulo and Rio de Janeiro	S/P/O	Discuss the issue of integrating surveillance in hospitals (HES and hospital infection control surveillance), analyzing the possibilities and impossibilities of this integration.	They recognize that a HES service requires standards, flows, protocols, etc. to integrate its practices, which requires building integration. Although they believe that integration should not begin with changing the structure of the service, but with the work process, they hope that, at the end of this construction, a regulation will be created that proposes the integration of surveillance, making the proposal effective.
<i>Avaliação da Estratégia Nacional de Vigilância Epidemiológica Hospitalar</i>	Ruy <sup>35</sup>	Dissertation (Master's in Public Health) (2017)	2008 to 2016	São Paulo and Rio de Janeiro	O	Assess the network of HES units according to surveillance and financing models in Brazil between 2008-2016.	The change in the surveillance model has influenced the data produced by the Hospital Epidemiological Surveillance Network, but the strategy has proven effective over the years. Thus, the HES strategy supports the planning of health prevention and promotion actions, disease control, health problems and public health events, and guides decision-making at the three levels of Brazilian Health System management.

**Caption:** N: no; S: structure, P: process, O: outcome.

**Source:** developed by the author.

Versão para Tradução

In the analysis of included studies, we found works by several authors meeting different objectives. We observed that four studies carried out in the states of Pernambuco and Piauí, assessing HEU implementation, recorded moments of progress and setbacks. Moreover, there were deficiencies in the physical and material structure, a shortage of human resources and the need for training, compromising their operationalization.<sup>8,9,12</sup>

In turn, a study carried out in the state of Rio de Janeiro in 2017 reports the experience and challenges of implementing HEU. The authors describe that the unit plays a fundamental role as a reporting unit for the municipality and the state.<sup>10</sup>

A study conducted in Brasília in 2013 presented a situational diagnosis of the emergency hospital network's response capacity to events associated with international travelers. The authors observed that notification flows in HEU are not consolidated among professionals and there is a dichotomy between professionals working in care and surveillance.<sup>13,27</sup>

Another problem detected was the accumulation of HEU activities, performing, among other functions, the active search for events in hospitals, the investigation of events in their area of coverage, the performance of activities in other sectors concurrently with HEU activities, not having agile and efficient means of communication, revealing a lack of specific training for professionals in surveillance teams and a deficiency of human resources.<sup>13</sup>

A study on HEU in the state of São Paulo indicated that hospital surveillance has been carried out by highly qualified professionals, given their training and experience in the area, with a predominance of nurses. Most services are coordinated by medical professionals. Active search was the predominant form of screening for cases of diseases and conditions requiring compulsory notification, and several strategies were used for this purpose. Study participants considered insufficient human resources, difficulty in raising awareness among healthcare professionals and high workload as factors that hinder work processes.<sup>14</sup>

Still in São Paulo, a study carried out between 2006 and 2011, assessing the HEU network, contextualizing structure, work process and outcomes, demonstrated that, from the perspective of physical infrastructure, materials and equipment, the units present favorable conditions both in relation to the adaptation of their structures and in relation to the availability of IT equipment. Most of them face significant staff shortages. There are still some units that are in the process of adapting to certain indicators and need to



improve their procedures comprehensively. This involves not only organizing the activities carried out in HEU, but also expanding staff.<sup>15</sup>

In order to identify the relationship between the organizational climate in the HEU in the city of Natal, RN, in 2010, it was suggested that the performance of epidemiological surveillance in hospital settings demands professionals with a profile that ranges from the ability to overcome challenges to the ability to raise awareness of care professionals in the process. Furthermore, it is essential to have the necessary flexibility to deal with the transformations imposed by the environment in which the institution is located.<sup>16</sup>

Another study conducted in Natal on nurses' knowledge of HES actions concluded that most nurses are aware of epidemiological surveillance actions, especially notification actions, but do not notify the HEU. Most nurses, when identifying ND, do not communicate them to HEU. As a result, the information is fragmented and lost so that it does not express the performance of integrated work with this core group.<sup>17</sup>

Research conducted in Minas Gerais analyzed ND and injuries that occurred in a university hospital's HEU. Through detailed data analysis, it seeks to inform both the profile of the diseases reported and possible areas for improvement in the notification process and in the response to these events, thus promoting advances in public health management, contributing to implementing new HEU, reorganizing existing ones and preventing communicable diseases.<sup>20</sup>

A nationwide integrative review of HEU, carried out in 2019, highlighted that the obstacles to the full operationalization of HEU included: lack of staff training; lack of institutional support; low prioritization by public management; failure to comply with the requirements and competencies established in the regulation (Ordinance 2,529/2004); lack of periodic training; lack of preparation and publication of information generated by the units; insufficient research; lack of consistent monitoring of vital events in all units; lack of collaboration between unit technicians and Hospital Infection Control Committees (HICC); and underreporting of cases in some HEU.<sup>21</sup>

A study conducted in Brazil in 2015 sought to present the actions of HEU with other levels of healthcare, playing an important role in communication between the points of the Healthcare Network. The information obtained in hospital settings is of great importance and aids decision-making, contributing to meeting the health system's needs.<sup>22</sup>

A study carried out in a municipality of Cascavel in the state of Paraná revealed that underreporting notifiable diseases in hospital settings is a significant concern for health authorities and that there is a tendency to underestimate the real incidence of diseases due to several factors, such as lack of awareness, inadequate knowledge of notification protocols, reputational concerns and possible legal consequences.<sup>23</sup>

Seeking to verify an integrated practice between HES and Hospital Infection Control Service, a study carried out in the RJ-SP axis highlighted that collaboration between different types of surveillance, such as epidemiological and infection control, can result in a more comprehensive understanding of health risks. However, the research also identifies obstacles, such as the lack of effective communication between different teams and the lack of sharing of relevant data.<sup>24</sup>

In relation to searches for studies on HEU, we came across studies that present as the object of study, for instance, the diseases and injuries reported by the unit, such as healthcare-associated infections. However, these studies report, in parallel, on the organization functioning or system. From this, we can verify parts of the HES operationalization systematics, whether focusing on the structure, process or outcome. This occurs mainly in international studies.<sup>25-28</sup>

## **CONCLUSION**

The study presented 18 publications of studies on structure and/or processes and/or outcomes on HEU, distributed nationwide.

It was identified that the studies address topics such as notification and investigation of diseases and injuries and active search. Some even verticalize analyses on integration between sectors within hospital settings and the external care network. However, there are few studies that analyze the performance of the units – analysis of process and outcomes, considering dissemination of information, promotion of control actions and assessment of the efficacy and effectiveness of the measures adopted. We emphasize that the performance of a HEU must contemplate all these activities.

For now, this study provides an overview of HEU in the scientific literature, allowing a broader view of HEU scenarios, although studies on this subject are scarce. We therefore highlight the importance of studies that investigate the functioning and work process of these operational units (HEU) within hospitals, as well as their contribution to public health.

## REFERENCES

1. Magill SS, Edwards JR, Bamberg W, et al. Multistate point-prevalence survey of health care-associated infections. *N Engl J Med* 2014; 370 (13):1198-1208. Disponível em: <http://dx.doi.org/10.1056/NEJMoa1306801>.
2. BRASIL. Portaria no 2.529, 23 de novembro de 2004. Institui o Subsistema Nacional de Vigilância Epidemiológica em Âmbito Hospitalar, define competências para os estabelecimentos hospitalares, a União, os estados, o Distrito Federal e os municípios, cria a Rede Nacional de Hospitais de Referência para o referido Subsistema e define critérios para qualificação de estabelecimentos. *Diário Oficial da República Federativa do Brasil, Brasília (DF), 2005 maio 2; Seção 1:35*. Disponível em: <https://www.legisweb.com.br/legislacao/?id=187487>
3. BRASIL. Portaria MS/GM no 2.254, de 5 de agosto de 2010. Institui a Vigilância Epidemiológica em Âmbito Hospitalar, define as competências para a União, os Estados, o Distrito Federal, os Municípios, os critérios para a qualificação das unidades hospitalares de referência nacional e define também o escopo das atividades a serem desenvolvidas pelos Núcleos Hospitalares de Epidemiologia. *Diário Oficial da República Federativa do Brasil, Brasília (DF), 2010 ago 5*. Disponível em: [https://bvsms.saude.gov.br/bvs/saudelegis/gm/2010/prt2254\\_05\\_08\\_2010.html](https://bvsms.saude.gov.br/bvs/saudelegis/gm/2010/prt2254_05_08_2010.html)
4. Dantas DI, Freitas RF, Batista DA, et al. Contribuição do Núcleo de Vigilância Epidemiológica em uma Unidade de Pronto Atendimento para Notificação Compulsória de Agravos. *RevBras Cien Saúde [Internet]* 2014; 18 (1):21-26. Disponível em: <https://periodicos.ufpb.br/index.php/rbcs/article/view/21002>.
5. BRASIL. Ministério da Saúde. Portaria nº 2.616, de 12 de maio de 1998. Dispõe sobre as diretrizes e normas para a prevenção e o controle das infecções hospitalares. *Diário Oficial da União, Brasília (DF), 1998 maio 12*. Disponível em: [https://bvsms.saude.gov.br/bvs/saudelegis/gm/1998/prt2616\\_12\\_05\\_1998.html](https://bvsms.saude.gov.br/bvs/saudelegis/gm/1998/prt2616_12_05_1998.html)
6. Santos SSBS, Melo CMM. Avaliação da descentralização da vigilância epidemiológica para a Equipe de Saúde da Família. *Cien Saúde Colet* 2008; 13(6): 1923-32. Disponível em: <http://dx.doi.org/10.1590/S1413-81232008000600028>.
7. BRASIL. Ministério da Saúde. Portaria nº 183, de 30 de janeiro de 2014. Regulamenta o incentivo financeiro de custeio para implantação e manutenção de ações e serviços públicos estratégicos de vigilância em saúde. *Diário Oficial da República Federativa do Brasil, Brasília (DF), 2014 jan 30*. Disponível em: <https://svs.aids.gov.br/daent/cgiae/vigilancia-do-obito/servico-verificacao-obito/portaria-183-30012014.pdf>
8. Mendes MF de M, Freese E, Guimarães MJB. Núcleos de epidemiologia em hospitais de alta complexidade da rede pública de saúde situados no Recife, Pernambuco: avaliação da implantação. *RevBras Saúde MaternInfant* 2004; 4(4): 435-447. Disponível em: <http://dx.doi.org/10.1590/S1519-38292004000400013>.

9. Guimarães MSO, Andrade JX, Araújo TME, et al. Avaliação da implantação dos núcleos hospitalares de epidemiologia. *RevEnf UFPE*, 2019; 13(4):1097. Disponível em: <https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/236618/31839>
10. Escosteguy CC, Pereira AGL, Medronho RA, et al. Três décadas de epidemiologia hospitalar e o desafio da integração da Vigilância em Saúde: reflexões a partir de um caso. *Cien SaudeColet* 2017; 22(10):3365–79. Disponível em: <http://dx.doi.org/10.1590/1413-812320172210.17562017>.
11. Siqueira Filha NT, Vanderlei LGM, Mendes MFM. Avaliação do Subsistema Nacional de Vigilância Epidemiológica em Âmbito Hospitalar no Estado de Pernambuco, Brasil. *Epidemiol Serv Saúde* 2011; 20(3):307–16. Disponível em: <http://dx.doi.org/10.5123/S1679-49742011000300005>.
12. Escosteguy CC, Medronho RA, Madruga R, et al. Vigilância epidemiológica e avaliação da assistência às meningites. *Rev Saúde Pública* 2004; 38(5):657-63. Disponível em: <https://www.scielo.br/j/rsp/a/6MZNqcKKDKWQON44LcftXCK/>
13. Santos ACRB. Diagnóstico situacional da capacidade de resposta da rede hospitalar de emergência a eventos associados a viajantes internacionais em cidade-sede da Copa de 2014: estudo de caso de Brasília [dissertação]. Brasília (DF): Universidade de Brasília; 2013. Disponível em: [https://www.arca.fiocruz.br/bitstream/handle/icict/36497/ve\\_Ana\\_Clara\\_ENSP\\_2013?sequence=2&isAllowed=y](https://www.arca.fiocruz.br/bitstream/handle/icict/36497/ve_Ana_Clara_ENSP_2013?sequence=2&isAllowed=y)
14. Cardozo EM. Avaliação da rede de núcleos hospitalares de epidemiologia do Estado de São Paulo [dissertação]. Botucatu (SP): Universidade Estadual Paulista Júlio de Mesquita Filho; 2018. Disponível em: <https://www3.fmb.unesp.br/questionarios/index.php/234227/lang-pt-BR>
15. Luna JA, Simoes O, Figueiredo GM, et al. Avaliação do Subsistema de Vigilância Epidemiológica em Âmbito Hospitalar - Rede de Núcleos Hospitalares de Epidemiologia do Estado de São Paulo [dissertação]. São Paulo (SP): Faculdade de Ciências Médicas da Santa Casa de São Paulo; 2013. Disponível em: [https://oasisbr.ibict.br/vufind/Record/BRCRIS\\_563a0f6ee9a23c1055ff11d0528db8de](https://oasisbr.ibict.br/vufind/Record/BRCRIS_563a0f6ee9a23c1055ff11d0528db8de)
16. Matias ACM. Clima organizacional e satisfação laboral: um estudo sobre os núcleos hospitalares de epidemiologia de Natal/RN [dissertação]. Natal (RN): Universidade Federal do Rio Grande do Norte; 2010. Disponível em: <https://repositorio.ufrn.br/handle/123456789/14702?locale=en>
17. Ribeiro LM. Conhecimento do enfermeiro sobre as ações de vigilância epidemiológica no Hospital Universitário Onofre Lopes, Natal, RN. 2010. 148 f. Dissertação (Mestrado em Assistência à Saúde) - Universidade Federal do Rio Grande do Norte, Natal, 2010. Disponível em: <https://repositorio.ufrn.br/jspui/handle/123456789/14719>
18. Medeiros ARP, Larocca LM, Chaves MMN, et al. O processo de trabalho de enfermeiros em núcleos hospitalares de epidemiologia. *CogitareEnferm* 2015; 20(1):67-73. Disponível em: <http://dx.doi.org/10.5380/ce.v20i1.36408>.

19. Dantas DI, Freitas RF, Batista DA, et al. Contribuição do Núcleo de Vigilância Epidemiológica em uma Unidade de Pronto Atendimento para a notificação compulsória de agravos. RBCS [Internet]. 4º de novembro de 2014;18:21-6. Disponível em: <https://periodicos.ufpb.br/index.php/rbcs/article/view/21002>
20. Silva PLN, Oliveira RS, Lopes TRC, et al. Notificações de doenças compulsórias e dos agravos em um Hospital Universitário de Minas Gerais, Brasil. RevEnferm UFSM 2014; 4(2): 237–46. Disponível em: <http://dx.doi.org/10.5902/2179769210676>.
21. Lima CRC, Piva SGN, Almeida ES, et al. Núcleos Hospitalares de Vigilância Epidemiológica no Brasil: Uma Revisão Integrativa de Literatura Científica. RevEpidemiol Controle Infecç 2019; 9(2). Disponível em: <http://dx.doi.org/10.17058/reci.v9i2.12379>.
22. Picolli T. Vigilância em Saúde na Atenção Terciária: um Estudo sobre os Núcleos Hospitalares de Epidemiologia [dissertação]. Florianópolis (SC): Universidade Federal de Santa Catarina; 2015. Disponível em: <https://repositorio.ufsc.br/handle/123456789/169339>
23. Griep R. Subnotificação das doenças de notificação compulsória no contexto hospitalar [dissertação]. Florianópolis (SC): Universidade Federal de Santa Catarina; 2003. Disponível em: <https://repositorio.ufsc.br/handle/123456789/84750>
24. Schettert PA. Vigilância hospitalar: possibilidades e obstáculos de uma prática integrada [tese]. Rio de Janeiro: Universidade do Estado do Rio de Janeiro; 2008. Disponível em: <http://www.bdt.uerj.br/handle/1/4619>
25. Ruy MB. Avaliação da Estratégia Nacional de Vigilância Epidemiológica Hospitalar [dissertação]. Rio de Janeiro (RJ): Fundação Oswaldo Cruz; 2017. Disponível em: <https://www.arca.fiocruz.br/handle/icict/30873>
26. Soti DO, Kinoti SN, Omar AH, et al. Feasibility of an innovative electronic mobile system to assist health workers to collect accurate, complete and timely data in a malaria control programme in a remote setting in Kenya. Malaria J 2015; 14(1): 247-55. Disponível em: <http://dx.doi.org/10.1186/s12936-015-0965-z>.
27. Nsubuga P, Eseko N, Tadesse W, et al. Structure and performance of infectious disease surveillance and response, United Republic of Tanzania, 1998. Bull World Health Organ 2002; 80(3). Disponível em: <https://pubmed.ncbi.nlm.nih.gov/11984605/>
28. Muñoz R, Borobia AM, Quintana M, et al. Outcomes and costs of poisoned patients admitted to an adult emergency department of a Spanish tertiary hospital: Evaluation through a toxicovigilance program. PloSOne 2016; 11(4):e0152876, 2016. Disponível em: <https://doi.org/10.1371/journal.pone.0152876>.

#### **Authors' contributions:**

**Rodrigo Faria Dornelas** contributed to literature review, abstract writing, introduction, methodology, discussion, interpretation and description of results, preparation of tables,

and conclusions. **Ana Luiza Lima Sousa** contributed to article review (abstract, introduction, method, extraction table presentation, results, discussion, and conclusion) and suggestions. She conducted a comprehensive critical analysis of the content, identifying areas that required greater clarity, coherence, or depth.

All authors approved the final version to be published and are responsible for all aspects of the work, including ensuring its accuracy and integrity.

Versão para Tradução