

Review

Competence Profile of the Intra-Hospital Emergency Team Nurse: A Scoping Review

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Abstract: Background: Nurses in intra-hospital emergency teams are required to be competent in responding to situations of clinical deterioration and emergency. This study aimed to map the extent, variety, and nature of the literature on the competences of the intra-hospital emergency teams nurse. Methods: A scoping review based on the principles of the Joanna Briggs Institute. The search of the databases was conducted in July and August 2023, and the search strategy was adjusted. The analysis of the relevance of the articles, data extraction, and synthesis were conducted by two reviewers. Discrepancies were resolved by a third reviewer. The data were extracted using the competency outcomes and performance assessment (COPA) model. Results: Fourteen results were analyzed, and the competences organized by the domains of the COPA model which are considered by some authors to be advanced or specialized are as follows: assessment and intervention, communication, critical thinking, teaching, human caring relationships, management, leadership, and knowledge integration. Other competences, such as self-confidence, ability to remain calm, concentration, quick reaction, and a sense of humor, were mentioned. Conclusions: The results highlighted the competences of the intra-hospital emergency team nurse. This knowledge could contribute to educational programs and shape the competency profile of intra-hospital emergency team nurses.

Keywords: competences; clinical deterioration; nurse; intra-hospital emergency team



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1. Introduction

Emergency situations that occur at the hospital level are a concern as they threaten patient safety, one of the fundamental elements of quality in healthcare [1].

The ageing population, increased life expectancy, and associated comorbidities, coupled with a shortage of health professionals, inexperience, and failures in monitoring and surveillance, may contribute to the occurrence of emergency situations during a hospitalization episode [2,3].

The growing concern for patient safety, combined with health quality, has led institutions and professionals to develop strategies [4]. In this sense, the European Resuscitation Council argues that hospitals should have a clear policy for providing a clinical response to patients with altered vital signs and critical illnesses, which may include an intensive care outreach service and/or an inter-hospital emergency team (IHET) [5].

IHETs have emerged as an integral mechanism for hospital patient safety and are part of a rapid response system (RRS) [6,7]. They aim to mobilize knowledge and skills in

critical care to attend to patients in clinical deterioration or emergencies in locations outside the ICU in a timely manner to avoid adverse events [3].

A rapid response team (RRT) first appeared in Australia in 1990 in the form of an emergency medical team [8] after signs of deterioration were observed before a cardiopulmonary arrest (CRA) occurred [9]. In the study by Schein et al. [10], it was found that more than 80% of people who suffered a cardiac arrest while in a hospital had deteriorating vital signs in the previous 8 h. Thus, there has been a paradigm shift from cardiopulmonary resuscitation to the prevention of critical events [11], where RRTs are activated before the emergency [12]. The patient's survival will depend on the effectiveness of the response to these situations [13].

The "100,000 Lives Campaign", launched in 2004 by the Institute for Healthcare Improvement (IHI), corresponded to efforts to promote patient safety by encouraging hospitals or other care providers to set up RRTs with the aim of significantly reducing morbidity and mortality in American healthcare [12].

The benefits of implementing IHETs are mentioned in the literature as follows: preventing complications; reducing mortality and morbidity rates; reducing CRAs, unplanned admissions to the ICU; length of hospital stay; and professional satisfaction [3,9,10,13]. They also overcome difficulties in the care of patients whose condition has progressed to a critical situation in a ward setting [1].

The IHET's scope of action is the inpatient environment; although emergency situations can occur anywhere in a hospital, they are more common in the inpatient setting [11]. It should be noted that the inpatient environment includes users, visitors, staff, and other people on the premises [14]. Inspired by Australia and incorporating the IHI's suggestion, different IHET models have been introduced in various hospitals, but there is no single model in Europe [11].

In Portugal, these teams are called intra-hospital medical emergency teams (IMET), and their creation and implementation was determined by the Directorate-General for Health (DGS) in 2010 [13]. Usually, IHETs are multidisciplinary, but they can be made up of just doctors or nurses [11]. Internationally, it is accepted that doctors and nurses belong to the ICU [5]. In Portugal, the DGS states that this team should be made up of a doctor and a nurse with advanced skills in dealing with critically ill patients and in resuscitation techniques, preferably with training in intensive care and emergency care [15]. Wang and Zheng [16] refer to nurses as the most indispensable members of the team, and McNeill et al. [8] add that "advanced practice skills such as advanced knowledge, clinical skills and communication skills" are required. Being an IHET nurse is professionally complex, and a process of individual and professional development is required to demonstrate multiple competences [17].

The subject of IHETs remains underdeveloped at the national level, especially with respect to nurses' competences, which is why this scoping review was justified.

A preliminary search was carried out on the Prospectively Registered Systematic Reviews (PROSPERO), Joanna Briggs Institute, and Open Science Framework (OSF) databases, which revealed no scoping reviews published (or intended to be carried out) on the profile of IHET nurse competences.

Therefore, the aim of this scoping review was to map the extent, variety, and nature of the literature on IHET nurse competences and to answer the following question: What are the competences of the intra-hospital emergency team nurse?

2. Materials and Methods

2.1. Type of Review

This scoping review was carried out according to the methodology proposed by the JBI for scoping reviews, the manual for reviewers published in 2020 [18], and the preferred reporting items for systematic reviews and meta-analyses (PRISMA) extension for scoping reviews [19].

2.2. Review Question

What are the competences of the intra-hospital emergency team nurse?

2.3. Eligibility Criteria

2.3.1. Participants

This review considered studies that included nurses working in IHETs as the study population.

2.3.2. Concept

This review considered studies that explored the competences of nurses working in IHETs. Competence was defined as a “set of knowledge, skills and abilities that [nurses] mobilize in the context of clinical practice” (p. 10087) [20].

2.3.3. Context

This review considered studies in which the context was the intra-hospital environment.

2.4. Types of Sources

Primary studies and systematic, narrative, and integrative literature reviews were considered for inclusion. The paradigms were qualitative, quantitative, and mixed methods. Phenomenological, ethnographic, grounded theory, and appreciative inquiry studies were included, as well as observational studies with descriptive and analytical or experimental designs, including randomized, non-randomized, or quasi-experimental controlled clinical studies. In addition, articles or opinion articles, experience reports, gray literature, reports, or guidelines were also considered.

2.5. Exclusion Criteria

Studies written in languages other than Spanish, English, and Portuguese were excluded, as were studies without free access to the full text. No time frame was considered.

2.6. Search Strategy

Once the review question had been defined, the search strategy was carried out in 3 stages.

1. An initial limited search in CINAHL Complete and MedLine Complete (via EBSCO-host) to identify articles on the topic, followed by an analysis of the words contained in the title, abstract, and indexed terms used by the authors in order to develop the search strategy.
2. A second search, carried out in July and August 2023, including DeCS/MeSH descriptors, CINAHL terms, and natural language, combined with Boolean operators (AND/OR), adapted to the following databases: CINAHL Complete; Cochrane Library, including the Cochrane Database of Systematic Reviews and the Central Register of Controlled Trials (CENTRAL); MedicLatina; MedLine; Scielo; Scopus; and Web of Science (all via EBSCO). We also conducted a search for unpublished studies in Portugal's Open Access Scientific Repositories (RCAAP). The search strategies can be found in Supplementary Material Section S1.
3. Finally, the bibliographical references of the included articles were analyzed, and those that met the inclusion criteria were selected.

After the search, all the records identified were compiled and loaded into the RAYYAN[®] program (<https://www.rayyan.ai/>) and duplicates were removed. The titles and abstracts were analyzed by two independent reviewers (LP and NM) according to the inclusion criteria. Potentially relevant articles were retrieved in their entirety and the full texts were analyzed. Those that did not meet the inclusion criteria were excluded, and the reasons for their exclusion are shown in Figure 1. Any disagreements that arose between the reviewers were resolved through discussion or via a third reviewer (IR).

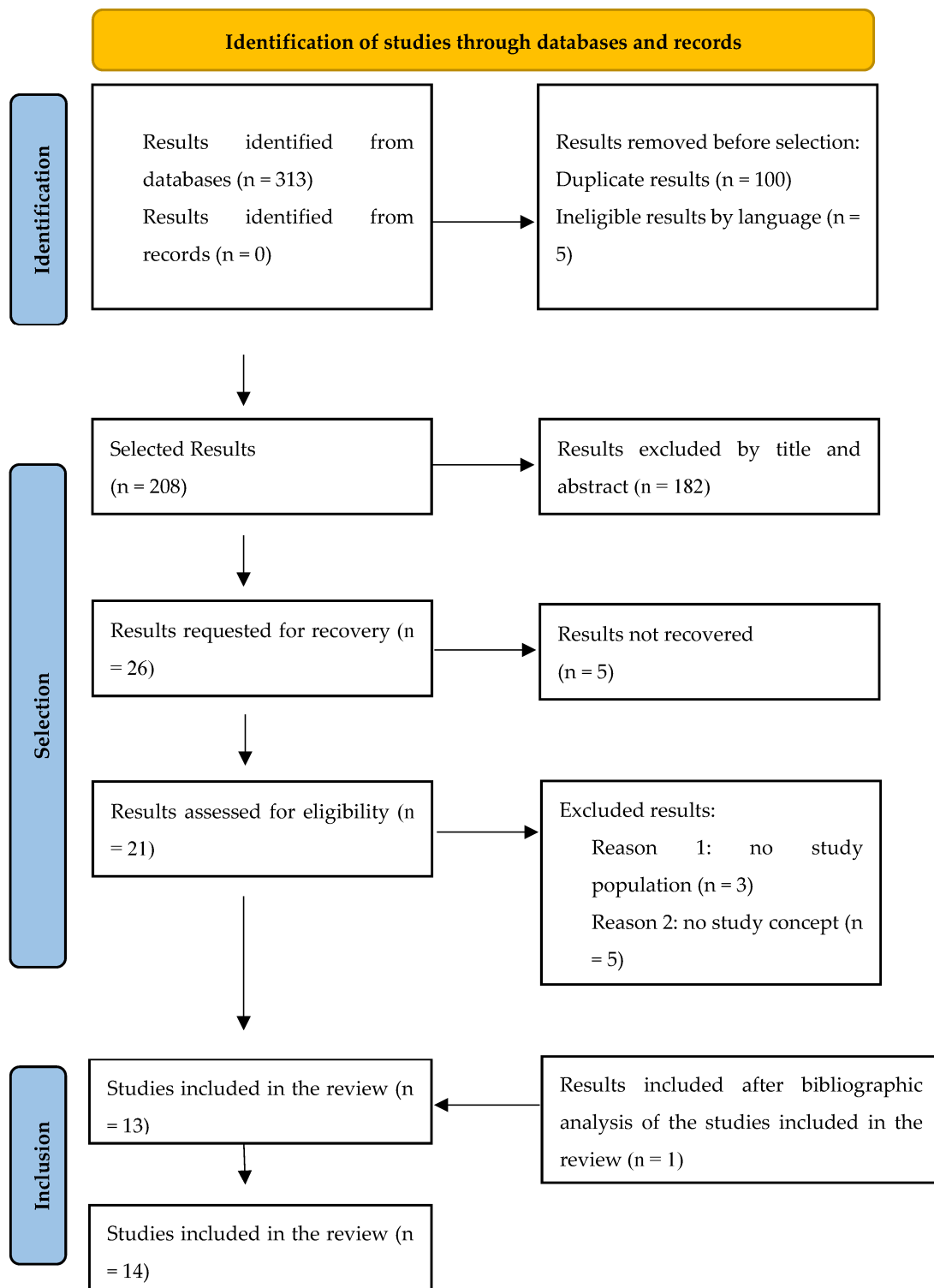


Figure 1. PRISMA 2020 flowchart of the study selection process (adapted).

2.7. Data Extraction

The data were extracted by two independent reviewers (LP and NM) using a data extraction tool they developed themselves in line with the objective and review question. The instrument developed (Supplementary Material Section S2) included Lenburg's Competency Outcomes Performance Assessment (COPA) Model, which includes 8 dimensions of competence: assessment and intervention; communication; critical thinking; relationship and care; teaching; management; leadership; and knowledge integration [21]. The mapped

competences which were not included in the dimensions of this model were added as other competences. Disagreements that arose between the reviewers were resolved through discussion or via a third reviewer (IR).

3. Results

3.1. Study Selection

As described in Figure 1 (PRISMA 2020 flowchart of the study selection process (adapted)), 313 results were identified, of which 100 were excluded for duplication and 5 were excluded for not meeting the language criterion. After applying the inclusion criteria, 182 were excluded based on title and abstract. Twenty-six results were obtained, five of which did not have free access to the full text. Thus, 21 potentially relevant results were extracted in full, 8 of which were excluded after full reading because they did not meet the population and concept criteria. Thirteen results were obtained and analyzed in detail. After bibliographic analysis of these studies, one article was added, and fourteen results were included in this scoping review.

3.2. Characteristics of the Included Studies

The characteristics of the studies are summarized in Supplementary Material Section S3, which includes the author(s), year of publication, country, title, type of study, objective(s), and main conclusions.

The publication date of the results varied between 2005 and 2023. It was found that more-recent studies, i.e., from 2018 onwards, described the competences of IHET nurses in greater detail, which may be related to the current concern for patient safety and healthcare quality. Fourteen articles were included [2,8,9,16,17,22–30].

The types of study included were primary studies [2,8,16,17,22,24–26], literature reviews [9], opinion articles [23], and experience reports [27–30]. The countries where the studies were conducted were the United States of America (USA) [9,26,28–30], Australia [2,22,24,25,27], Denmark [17], United Kingdom [23], China [16], and South Korea [8].

The population considered in the studies was nurses from intra-hospital emergency Teams. Of the 14 results analyzed, 13 included ICU nurses as part of the IHET [2,8,16,17,22–30], and 1 article included emergency nurses as well as ICU nurses [9]. In one result [27], the nurses’ service of origin was not specified, and in two results, it was stressed that emergency nurses could be part of these teams [8,30]. The concept was the competences of these nurses, and the context was the in-hospital environment, where all the results referred to hospitalization.

3.3. Analysis of Results

The analysis of the results revealed the competences of IHET nurses, which were organized via the COPA Model and are shown in Table 1.

Table 1. Results organized in accordance with the competency dimensions of Lenburg’s COPA Model (1999) [21].

Competences of the COPA Model	Articles
Assessment and intervention skills	[2,8,16,17,22–26,28–30]
Communication skills	[2,8,9,16,22,24–26,28–30]
Critical thinking skills	[2,8,16,17,22,23,25–28,30]
Relationship and care skills	[2,8,17,22,25]
Teaching skills	[2,8,9,17,23–26,30]
Management skills	[2,8,16,17,24,25,28,30]
Leadership skills	[2,8,9,17,22–24,26,30]
Knowledge integration skills	[2,8,9,16,22,26–29]

In addition to the competences mentioned above, some authors have referred to others that are considered important in an IHET nurse, as described in Table 2.

Table 2. Results organized in accordance with other competences evidenced in the analyzed literature.

Competences	Articles
Self-confidence	[2,17,24]
Staying calm	[16,22]
Concentration	[16,17,22]
Acting/acting quickly	[2,16]
Sense of humor	[22]

3.3.1. Assessment and Intervention Skills

Weatherburn and Greenwood [2] demonstrated that IHET nurses have advanced assessment skills and that “continuous monitoring... is considered a key component” (p. 125). Jackson [23] pointed out that the nurse in question is responsible for leading both the initial and ongoing assessment of the patient. Currey et al. [22] shared the participants’ view that nurses “need to develop... strong assessment skills at postgraduate level to enable them to recognize and respond effectively to the deteriorating patient” (p. 81).

Some participants in the study by Yuan et al. [16] expected nurses to be able to carry out a physical examination and apply assessment tools and strategies. Topple et al. [24] mentioned the following as the most common responsibilities of nurses: assessing circulation, state of consciousness, and issues pertaining to the chest and carrying out the neurological examination. Also, in the article by Repasky and Pfeil [30], there is reference to the excellence of assessment skills, assessment of the patient and situation, validation of assessments carried out by ward nurses, and cardiac monitoring in unmonitored areas of the hospital.

Won and Kang [8] pointed out that the nurse has the role of assessing the patient and, in order to accomplish this, needs to monitor the patient, determine the risk of deterioration, maintain a continuous assessment, and plan treatment and interventions. Jackson [23] mentioned that in some IHET models, the nurse periodically reassessed early warning scores, contacted ward colleagues to discuss the patient’s plan, and visited the patient to assess or validate the activation of IHET.

In the study by Won and Kang [8], it was also reported that the nurses “centrally managed a computerized triage program... to predict acute exacerbation and clinical deterioration”, “monitored vital signs and laboratory test results of inpatients 24 h a day to identify high-risk patients” to predict acute exacerbation and clinical deterioration, “and monitored inpatients vital signs and laboratory test results 24 h a day to identify patients at high risk or with acute deterioration, visiting them to assess their condition” (p. 4).

Several authors have listed multiple nursing interventions performed during IHET. The most frequently performed interventions were the following: continuous monitoring of vital signs [2,8,24–26]; administration of oxygen therapy and resolution of airway problems [2,8,17,23,24,26,28,30]; placement of venous access [2,17,24,28,29]; preparing and administering emergency drugs and fluids [2,8,17,22,24,26,28–30]; collaborating in procedures such as endotracheal intubation [2,8,24,28]; carrying out complementary exams, such as taking specimens [8,17,22,24,28] and performing ultrasound exams [8] and electrocardiograms [17,22,24,30].

Although not as frequently described, intra-hospital transportation [17,24], the handling of emergency equipment/material [2,28–30], and the implementation of comfort and analgesia measures [2] have also been mentioned.

3.3.2. Communication Skills

One of the participants in Weatherburn and Greenwood's study [2] stated that IHET nurses must have effective communication skills in order to be competent. Won and Kang [8] and Repasky and Pfeil [30] showed that one of the fundamental requirements for nurses is communication skills. Won and Kang [8] referred to these as essential for "educating, consulting, supporting and coordinating" (p. 8). In the literature review by Salvatierra et al. [9], it was mentioned that the most effective nurses were those with excellent communication skills.

Leach et al. [26] emphasized that the specialist nurse contributed knowledge and skills in a particular area. Yuan et al. [16] pointed out that nurses "must have professional communication skills to ensure that information is transmitted quickly, accurately and effectively" (p. 2046). Appropriate documentation, report writing skills, the ability to listen and communicate with patients, families and colleagues, assertiveness, and debriefing skills were observed in the area of communication by Currey et al. [22].

The demonstration of compassion and empathy was also mentioned within the category of communication skills in the study by Currey et al. [22]. Weatherburn and Greenwood [2] emphasized the communication of assessment results and alerting one's colleagues to changes in vital signs in team discussions [2]. In the study by Topple et al. [24], communication was one of the most demonstrated skills when it came to completing documentation, either via handwritten note or electronic record.

This statement is reinforced by Scholle and Mininni [29], who point out that nurses' duties include "recording events", "obtaining the patient's chart", and "recording interventions" (p. 39). Currey et al. [22] and Jamieson et al. [28] emphasized the use of the ISBAR or SBAR tool as important for transmitting and recording information, respectively. In the study by Santiano et al. [25], the ability to "document" and "receive/transmit information" was mentioned, especially at the time of the "handover" (p. 120).

3.3.3. Critical Thinking Skills

Bunkenborg et al. [17] reported that IHET nurses, in order to meet the patient's needs, "tried to understand the whole situation" and "made in-depth reflections on how they could help the patient and thus help the nurse and doctor who had called" (p. 3565). In the same study, nurses described situations where they were involved in making clinical decisions, namely, about prescribing medication or how to approach end-of-life care situations.

Weatherburn and Greenwood [2] mentioned that nurses used expert clinical reasoning to assess the patient quickly and triage the patient to the most appropriate place. The same author showed that nurses' reasoning was supported by advanced critical thinking skills and the ability to anticipate deterioration and prioritize care [2].

The participants in the same study included "anticipating care", "using intuition", "solving problems", and "questioning care" (p. 122) as part of critical thinking [2]. Won and Kang [8] presented triage as one of the most important roles of IHET nurses, referring to priority-setting as fundamental to decision-making.

Santiano et al. [25] also referred to setting intervention priorities as a nurse's responsibility. Leach et al. [26] stated that nurses "contributed expert clinical judgment, drawing on their experience with critically ill patients, their knowledge of risks and the signs and symptoms of early clinical instability" (p. 3). Another conclusion of this study concerns the nurse's decision-making power, for example, when transferring patients from the ward to the ICU.

In the study by Currey et al. [22], it was mentioned that IHET nurses should have "exceptional decision-making skills" (p. 80), advanced critical thinking skills, and the ability to anticipate clinical deterioration. Yuan et al. [16] also referred to critical thinking skills. In this study, non-nurse IHET members expected nurses to have "quick-thinking", observational skills, "the ability to discover, analyze and solve problems", "good critical thinking", and the ability to "make the best decision" [16].

Several studies have referred to practices based on protocols, previously approved by the institution, which are based on scientific evidence, and the decision to implement them lies with the nurses [23,27,28,30]. Weatherburn and Greenwood [2] refer to these protocols as a way to help IHET nurses “sort through relevant information, organize their thoughts and provide effective care to maintain patient safety” (p. 125).

3.3.4. Relationship and Care Skills

Santiano et al. [25] highlighted privacy and reassuring patients as the focus of 25 IHET nurses in their study. In the study by Bunkenborg et al. [17], the nurses reported that they focused, above all, on meeting the needs of the patients, that they used “this approach as a strategy to ensure safe and dignified care for all patients”, and that, when carrying out interventions, they “balanced this obligation by taking into account issues of patient safety and dignity” (p. 3565).

The study by Weatherburn and Greenwood [2] recognizes the importance of keeping the patient at the center of the scenario in order to avoid the dehumanization of care. The same authors showed that in their performance, nurses make efforts to humanize care, namely, through physical proximity, which also aims to “provide comfort through therapeutic connections such as touching, reassuring and explaining what was happening”, which allows them to “support the patient, be a calm presence, reassure them and keep them safe” and, at the same time, maintain a “holistic view of the patient” [2] (p. 124). In addition, “knowing the patient” and “involving the patient” were also mentioned in the study by Weatherburn and Greenwood [2], which emphasized the balance between meeting the physiological needs of the patient and maintaining a holistic view, as well as the importance of “knowing the patient’s wishes regarding end-of-life care” (p. 124).

End-of-life care has also been considered by other authors. For example, Bunkenborg et al. [17] stated that nurses were involved in “discussions about their role in end-of-life care decisions”, as they “felt obliged to ask and make the doctor reflect on end-of-life care plans, for both ethical and practical reasons” (p. 3567).

Another example is the study by Won and Kang [8], in which it was stated that nurses provided support in decision-making. Support for patients and their families was provided through “information about patient treatment and nursing care”, “shared decision-making”, “defending the right to choose tests and treatments”, and “discussing the discontinuation of life-sustaining treatment” [8] (p. 4). “Advocating for the client”, where the wishes of the patient and family are defended, was also a skill mentioned as important [2,8,22].

3.3.5. Teaching Skills

In the study by Bunkenborg et al. [17], it was assumed that IHET nurses provided “practical help and guidance in a professional and pedagogical manner” to the ward nursing team during critical situations (p. 3566). This statement is corroborated by various studies identified in this field. In some studies, they are referred to as a resource [2], as mentors and coaches [23], and as clinical supervisors [8,24].

Jackson [23] stated that “this proactive approach harnesses... nursing expertise to support the ward nurse in the early identification and management of clinical deterioration” (p. 40). According to Salvatierra et al. [9], IHET nurses were a “mobile educational resource” (p. 620). This idea is present in the study by Repasky and Pfeil [30], where it was determined that “a cardiorespiratory arrest was probably avoided” when the IHET nurse “quickly instructed the team to use a bag-valve-mask and perform assisted ventilations” (p. 377). In the same study, it was also mentioned that the nurses “taught assessment and communication skills to the new nursing staff, acting as role models” [30] (p. 377).

Leach et al. [26] highlighted “the exchange between the two nurses” as an “opportunity for support and guidance” (p. 2), with each IHET performance, according to Salvatierra et al. [9], being a potential “learning moment”, “demonstrating new or little-used techniques to improving patient assessment skills” (p. 620).

Topple et al. [24] mentioned education as one of the most frequent interventions, particularly in clinical assessment and the use of equipment. It is important to note that in addition to peer education, teaching “young doctors how to deal with deteriorating patients” was considered to be the role of experienced nurses in these teams [17] (p. 3566). Patient and family education has also been identified by some authors [8,23,25].

3.3.6. Management Skills

Several studies have referred to the importance of teamwork. In the study by Bunkenborg et al. [17], IHET nurses highlighted “the importance and significance of working together. . . to help patients and their families” (p. 3566). Weatherburn and Greenwood [2] stated that during the IHET’s work, there was evidence of teamwork, manifested by “helping each other with tasks and sharing responsibilities within their defined roles” (p. 123).

The study by Won and Kang [8] showed that IHET nurses “worked with doctors to plan appropriate interventions for high-risk patients” (p. 4). In the study by Yuan et al. [16], the importance of teamwork, unity, and cooperation was mentioned.

Weatherburn and Greenwood [2] showed that the nurse “clarified the management plan” and, although roles were not always clearly assigned, “everyone seemed to know what to do”, and when in doubt, they communicated with each other “to determine a plan of care” (p. 124). Reinforcing the above, Topple et al. [24] reported that IHET nurses contributed directly to the patient’s management plan, which points to their active participation in the care planning process.

The delegation of tasks was described as an important attribute of this nurse, as presented by Weatherburn and Greenwood [2] when they referred to the delegation of tasks, coordination of care, and monitoring of team activities by the nurse. This was reinforced by Santiano et al. [25], who stated that the following are interventions of the IHET nurse: “coordinating and delegating tasks”, “identifying the need for procedures”, and “organizing space and equipment” (p. 120).

To this, Won and Kang [8] added “coordination between services” by “sharing information with medical staff” or “adjusting the priority for admission to the ICU”, as well as “managing the rapid response team”; for example, nurses have responsibility for the “maintenance and inspection of equipment”, the “management of stock medication”, the “analysis of medication use”, and the “registration of activated cases and analysis of the performance of” IHET, among other things (p. 4). This study shows that the IHET nurse is the “team manager”, making “regular checking of equipment” and assuming the “management of medical materials”, demonstrating that “coordination is a significant role”, both with respect to the team or between services [8] (p. 4).

Repasky and Pfeil [30] stated that in an operation, nurses can request the “resources they consider appropriate” (p. 376), such as other professionals. Jamieson et al. [28] emphasize that the doctor can be called in if, during the assessment, the IHET nurse considers it necessary.

3.3.7. Leadership Skills

The role of leading, collaboration, and professional responsibility were skills that have been highlighted. Weatherburn and Greenwood [2] and Bunkenborg et al. [17] demonstrated that the IHET nurse assumed leadership within the team. Weatherburn and Greenwood [2] highlighted “being assertive”, “being competent”, and “being confident” as leadership qualities (p. 124), and Bunkenborg et al. [17] added that the nurses “were aware of their leadership role when they were involved in intra- and inter-professional collaboration” (p. 3565).

Also, in the study by Won and Kang [8], reference was made to the work of McNeill and collaborators, which highlighted the leadership role of IHET nurses. Jackson [23] referred to this kind of nurse as “responsible for leading the initial and ongoing assessment of the patient” (p. 38). According to Currey et al. [22], “the leadership competences desired in a curriculum include: role modeling, advocacy, accessibility, collaboration and support”

(p. 80). The same authors have shown that leadership skills are beyond what is expected of general care nurses. Another of the most common ideas in this area of competence was collaboration, which was often interpreted as helping colleagues on the wards or other professionals.

This was evident in the study carried out by Bunkenborg et al. [17], where they stated that the success of an intervention was characterized by “collaboration and dialogue... where the RRT nurse helped in practice and guided” the colleague and the doctors on the general ward (p. 3566). In the same article, it was shown that IHET nurses felt satisfied when they “engaged in fruitful collaboration” [17] (p. 3564).

The literature review by Salvatierra et al. [9] showed that the most effective IHET nurses were those who had “excellent collaborative skills” (p. 620). One example of collaboration was the exchange between nurses which “constituted a collaborative sharing of relevant information” to “prevent further deterioration of the patient’s clinical condition” and to “prevent an ad-verse event” [26] (p. 2–3). The aforementioned authors also stated that “the support provided... was mainly a skills-based approach to assessment, clinical decision-making, communication and care management” [26] (p. 3).

Won and Kang [8] reinforced the above with the statement that nurses guided decision-making. In addition, Repasky and Pfeil [30] demonstrated that IHET nurses helped nursing colleagues on the ward “to initiate appropriate interventions or simply to validate assessments... contacting the doctor or helping the patient’s nurse to do so” (p. 377).

Working in collaboration with doctors was added by Weatherburn and Greenwood [2]. Bunkenborg et al. [17] pointed out that IHET nurses were “aware of their professional responsibility, their knowledge and skills, but also of the limits to their professional performance” (p. 3569). However, Jackson [23] emphasized that all team members should have a solid understanding of the role of the IHET, the design of the team, and the role of each of its members.

Building alliances was another skill highlighted in this area. The IHET nurse is expected to have effective communication skills “with all staff in a respectful, supportive, constructive and non-judgmental manner and the ability to promote collegiality between various care providers” [24] (p. 14).

Bunkenborg et al. [17] highlighted “listening”, “mutual respect”, and “recognizing competencies and evaluations” (p. 3566), as well as the concerns of the nurses on the ward, as fundamental aspects for the relationship between the two and the success of their work.

The study by Weatherburn and Greenwood [2] highlighted the close working relationship with the ward nurses. They also highlighted the need to “establish a positive relationship with all members of the team, one that is inclusive, respectful and collaborative” and referred to trust in each other’s abilities as a fundamental aspect of the relationship [8] (p. 124).

3.3.8. Knowledge Integration Skills

Analysis of the results obtained in this scoping review showed that IHET nurses do indeed have a wealth of knowledge from both their training and professional experience.

In the study by Weatherburn and Greenwood [2], the participants showed that being competent involves applying knowledge, where “theoretical understanding of the physiology of a deteriorating patient” and “emergency algorithms and protocols” are included (p. 125). Yuan et al. [16] highlighted the need for professional theoretical knowledge and skills for professional practice and referred to knowledge as the basis of “nurse competence” (p. 2045). In this study, the knowledge required refers to the “field of nursing” and to “basic medical knowledge, including anatomy, pathophysiology and the clinical significance of examinations” [16] (p. 2045).

Several studies have shown the need for advanced resuscitation skills [2,8,16,27,28], where certification of these skills was a requirement to work in IHET. Currey et al. [22] demonstrated that “general clinical nursing knowledge” and “knowledge of the pathophysiology and immediate and intermediate medical and nursing interventions in clinical

deterioration” are fundamental and stated that “essential concepts of intensive care nursing, such as advanced life support, advanced ventilation, airway management and knowledge of hemodynamic monitoring” were also desired (p. 79). In the same study, the importance of “practical knowledge. . . of the policies, operation and evaluation processes of the entire RRS” and knowledge of “legislation and the ethical dimensions of end-of-life care” [22] (p. 80) were emphasized.

Yuan et al. [16] also highlighted the need to know how the hospital’s EHR works. The importance of knowledge in specific areas, related to the scope of the areas of activity of the IHETs, was highlighted by Currey et al. [22].

Leach et al. [26] reported that IHET nurses contribute with “critical care knowledge and skills, mainly from experience”, such as “rapid assessment, monitoring and changing the method of oxygen administration, starting and managing intravenous fluids and assessing the potential need for intubation” (p. 2). In addition, they mentioned that the “specialized clinical knowledge” obtained “through clinical experience. . . underpins the nurse’s thinking and elevates nursing practice to a level of expertise” [26] (p. 3).

Weatherburn and Greenwood [2] contributed to this idea by mentioning that “MET [IHET] nurses must be specialists. . . demonstrate proficiency in advanced resuscitation skills and have a strong theoretical understanding of the physiology of deterioration” (p. 126).

Salvatierra et al. [9] stated that the IHET nurse is often responsible for bringing the “latest evidence-based practices to the patient’s bedside” (p. 620). Won and Kang [8] emphasized the role that IHET nurses “play. . . in quality improvement and research” (p. 4).

In the study by Weatherburn and Greenwood [2], the authors stated that “intensive care experience” promotes “a range of patient deterioration scenarios and develops a high level of proficiency in the application of advanced assessment skills and the development of theoretical knowledge” (p. 125). Scholle and Mininni [29] also stressed the importance of “team members” having “experience in intensive care” (p. 39).

Won and Kang [8] highlighted the requirement for “clinical experience in the field of emergency or intensive care, postgraduate qualifications, other professional certifications related to advanced practice” (p. 4) for the nurses on these teams, because “advanced professional practice. . . provides immediate and reliable support for the necessary interventions for high-risk patients” [8] (p. 7).

3.3.9. Other Competences

In addition to the competences mentioned and organized by the COPA model, some authors have referred to other competences considered important in an IHET nurse. Examples include the studies by Yuan et al. [16] and Currey et al. [22], who emphasized the ability to remain calm and concentrate, the latter also being present in the study by Bunkenborg et al. [17]. Yuan et al. [16] added the “ability to react quickly” (p. 2046), which Weatherburn and Greenwood [2] complemented with assessing and acting quickly. Currey et al. [22] also highlighted a “sense of humor” (p. 80). Self-confidence/confidence was also reported by other authors [2,17,24].

The following table (Table 3) clearly states the skill mix required for nurses in rapid response teams.

Table 3. Skills domains of the COPA model.

Skills Domains of the COPA Model	
1. Assessment and intervention:	Assesses and monitors the deteriorating person continuously in order to identify new areas of instability and/or complications and acts immediately;
	Implements and manages complex therapeutic protocols.
2. Communication:	Manages interpersonal communication;
	Manages the therapeutic relationship, showing compassion and empathy;
	Capacity to transmit information quickly, accurately, and effectively;
	Masters information systems (using information technology).
3. Critical thinking:	Demonstrates critical and reflective capacity, establishing priorities;
	Demonstrates decision-making capacity by considering various aspects (theoretical and experimental knowledge, ethics, patient and family).
4. Relação e cuidado:	Ability to establish a therapeutic relationship;
	Provides holistic care centered on the patient and family;
	Ensures the implementation of practices that promote the privacy, safety, and dignity of the patient and family;
	Develops strategies that promote patient involvement in their therapeutic plan and decision-making.
5. Teaching:	Contributes to team training;
	Participates in clinical supervision;
	Identifies health education opportunities (for patients and/or their families).
6. Management:	Demonstrates the ability to work in a multi-professional team;
	Manages and organizes the work and care plan;
	Manages human and material resources.
7. Leadership:	Demonstrates professional, ethical, and legal responsibility;
	Takes the lead in situations of clinical deterioration/emergency;
	Collaborates with/supports the multi-professional team in assessing and implementing complex therapeutic protocols;
	Delegates and supervises delegated tasks.
8. Integration of knowledge:	Demonstrates specific knowledge and skills to care for the person in clinical deterioration;
	Holds certified training (postgraduate degrees or other certificates related to advanced practice [e.g., advanced life support]);
	Acts in accordance with current scientific evidence;
	Participates in continuous quality improvement policies;

Table 3. Cont.

Skills Domains of the COPA Model
Participates in research in the area of people in clinical deterioration/EIH.
Other skills
Demonstrates the ability to remain calm; concentration; quick assessment and reaction; self-confidence/confidence and a sense of humor.

Source: Adapted from Lenburg [21].

4. Discussion

In line with international recognitions, this analysis also showed that the majority of nurses working in IHETs belong to ICUs. However, it was also recognized that nurses who work in the emergency department can also work in these teams.

In Portugal, there is no definition of who the IHET nurses should be. It is only mentioned in DGS normative circular no. 15/DQS/DQCO that nurses should have skills in advanced airway management and resuscitation techniques, giving priority to emergency/intensivist training, with the minimum requirement being immediate life support (and preferably advanced life support) [15]. According to the DGS, intensive care medicine has been playing an increasingly important role in IHETs, so this is the service of choice [31].

In the literature analyzed, reference was made to terms that refer us to a higher level of competence than that obtained through a degree in nursing, such as specialized/specialist [2,17,22,26], expert/expertise [26], knowledge beyond that of a general care nurse [17], and advanced practice/competences [2,8,16,17,30].

Taking into account the competences highlighted as necessary for IHET nurses, it was found that they are parallel to those recognized by the OE in Portugal for nurses specializing in medical–surgical nursing in the area of specialization in critical care nursing. In its report, the OE argues that the nurses who should be part of the IHET should preferably be nurses who specialize in the aforementioned area since they are the ones with the core competences needed to work in situations of clinical deterioration and emergency [32]. This fact is supported in the study by Currey et al., who refer to theoretical and practical differentiation and the level of competence as being aligned with postgraduate curricula rather than undergraduate curricula [22]. In this study, the level of performance was described as being beyond what is expected of general care nurses as it is a specific area; patient deterioration is an emerging clinical area, with a need for a paradigm shift to make it a specialty distinct from intensive care [22].

In the literature analyzed, we did not find a properly defined competency profile for the IHET nurse; instead, we found a set of requirements related to the experience, training, and existing or desired competences of this nurse, which, when organized, can be a reference for drawing up their competency profile. The most frequently mentioned competences were assessment and intervention, communication, and critical thinking.

4.1. Implications for Practice

The results obtained for the competences of IHET nurses could contribute to the process of selecting nurses to join these teams and to training programs that help develop professional competences.

It is intended that this scoping review will contribute to the reflection and construction of the competency profile of IHET nurses at a national level as a resource for improving care and thus patient safety and quality in healthcare.

4.2. Implications for Research

It is suggested that primary studies be carried out in order to identify the skills that Portuguese IHET nurses consider necessary in order to act in a timely and appropriate manner in an emergency situation in the intra-hospital environment.

4.3. Limitations

As a limitation, this scoping review only included studies written in Spanish, English and Portuguese; studies published in other languages which could have been relevant were neglected. In addition, the results obtained portrayed an international reality, and different countries have their own RRS organizations and functions, as well as differences with respect to the nature and development of nursing careers.

Also, emergency medicine is not present in all countries around the world; hence, EM educational models are different, both for the ED physicians and nurses. It may be useful to extend this study to the prehospital environment, enrolling nurses that have a role in both the ED and prehospital care units.

5. Conclusions

At the end of this scoping review, the objective of mapping the extent, variety, and nature of the literature on the competences of IHET nurses was achieved. From the analysis of the 14 included studies, a number of competences emerged, stemming from training and experience, which were organized into the right competency domains of the COPA model: assessment and intervention, communication, critical thinking, relationship and care, teaching, management, leadership and knowledge integration. Others were also identified, such as self-confidence, staying calm, concentration, quick reaction, and a sense of humor. Some authors referred to these skills as advanced and specialized, which refers to nursing expertise and specialization in this specific area. Although this work does not produce new knowledge, it brings together existing knowledge and has implications for clinical practice.

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References

1. Rocha, C.C.P.; da Veiga Branco, M.A.R. Caracterização Do Fluxo ativação Da Equipa De Emergência médica Intra-Hospitalar. *Servir* **2022**, *2*, e27555. [\[CrossRef\]](#)
2. Weatherburn, C.; Greenwood, M. The Role of the Intensive Care Nurse in the Medical Emergency Team: A Constructivist Grounded Theory Study. *Aust. Crit. Care* **2023**, *36*, 119–126. [\[CrossRef\]](#) [\[PubMed\]](#)
3. Moreira, A.A.S.; Ramos, R.O.; Ligório, A.B.S.; Junqueira, K.D.; Corrêa, K.S. Rapid Response Team: What Factors Interfere with Its Performance. *Investig. Educ. Enferm.* **2018**, *36*, e05. [\[CrossRef\]](#)
4. Teixeira, A.C. Enfermagem Baseada na Evidência. In *Enfermagem de Urgência e Emergência*; Coimbra, N., Ed.; Lidel: Lisboa, Portugal, 2021; pp. 19–24.
5. Soar, J.; Böttiger, B.W.; Carli, P.; Couper, K.; Deakin, C.D.; Djärv, T.; Lott, C.; Olasveengen, T.; Paal, P.; Pellis, T.; et al. European Resuscitation Council Guidelines 2021: Adult Advanced Life Support. *Resuscitation* **2021**, *161*, 115–151. [\[CrossRef\]](#)
6. Fischer, C.P.; Bilimoria, K.Y.; Ghafari, A.A. Rapid Response Teams as a Patient Safety Practice for Failure to Rescue. *JAMA* **2021**, *326*, 7510. [\[CrossRef\]](#)

7. Chalwin, R.; Giles, L.; Salter, A.; Kapitola, K.; Karnon, J. Re-Designing a Rapid Response System: Effect on Staff Experiences and Perceptions of Rapid Response Team Calls. *BMC Health Serv. Res.* **2020**, *20*, 05260. [CrossRef]
8. Won, Y.-H.; Kang, J. Development of a Comprehensive Model for the Role of the Rapid Response Team Nurse. *Intensive Crit. Care Nurs.* **2022**, *68*, 103136. [CrossRef]
9. Salvatierra, G.G.; Bindler, R.C.; Daratha, K.B. Rapid Response Teams: Is It Time to Reframe the Questions of Rapid Response Team Measurement? *J. Nurs. Scholarsh.* **2016**, *48*, 616–623. [CrossRef]
10. Hillman, K.M.; Chen, J.; Jones, D. Rapid Response Systems. *Med. J. Aust.* **2014**, *201*, 519–521. [CrossRef]
11. Cardo, M.J. *Equipa de Emergência Intra-Hospitalar: Análise das Ativações E da Perceção da sua Importância Pelos Enfermeiros*; Dissertação de Mestrado, Instituto Politécnico de Leiria—Escola Superior de Saúde de Leiria: Leiria, Portugal, 2017. Available online: <https://iconline.ipleiria.pt/bitstream/10400.8/2987/1/Equipa%20de%20Emerg%C3%Aancia...+marisa%20cardo.pdf> (accessed on 2 April 2024).
12. Berwick, D.M.; Calkins, D.R.; McCannon, C.J.; Hackbarth, A.D. The 100 000 Lives Campaign. *JAMA* **2006**, *295*, 324. [CrossRef] [PubMed]
13. Gabinete do Secretário de Estado Adjunto e da Saúde. Despacho n.º 9639/2018. Diário da República n.º 198, Série II de 2018-10-15. 2018. Available online: <https://diariodarepublica.pt/dr/detalhe/despacho/9639-2018-116654166> (accessed on 2 April 2024).
14. Grupo Técnico para a Reforma da Organização Interna dos Hospitais. A Organização Interna e a Governação Dos Hospitais. Ministério da Saúde. 2010. Available online: <https://www.spmi.pt/wp-content/uploads/RelatorioFinalGTHospitaisVersaoFinal2.pdf> (accessed on 2 April 2024).
15. Direção-Geral da Saúde. Criação E Implementação de uma Equipa de Emergência Médica Intra-Hospitalar (IMET) (Circular Normativa N.º 15/DQS/DQCO). 2010. Available online: <https://www.dgs.pt/?ci=594&cur=1&newsletter=262> (accessed on 2 April 2024).
16. Yuan, X.; Wan, S.; Chen, Y.; Qin, W. Competency Expectations of Nurses in Rapid Response Teams: An Interview-Based Qualitative Study. *Ann. Palliat. Med.* **2022**, *11*, 2043–2049. [CrossRef]
17. Bunkenborg, G.; Barfod O’Connell, M.; Jensen, H.I.; Bucknall, T. Balancing Responsibilities, Rewards And Challenges: A Qualitative Study Illuminating The Complexity of Being A Rapid Response Team Nurse. *J. Clin. Nurs.* **2022**, *32*, 3560–3572. [CrossRef]
18. Peters, M.D.J.; Godfrey, C.; McInerney, P.; Munn, Z.; Tricco, A.C.; Khalil, H. Chapter 11: Scoping Reviews. In *JBIM Manual for Evidence Synthesis (2020 Version)*; Aromataris, E., Munn, Z., Eds.; Joanna Briggs Institute: Adelaide, Australia, 2020. [CrossRef]
19. Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Shamseer, L.; Tetzlaff, J.M.; Akl, E.A.; Brennan, S.E.; et al. The PRISMA 2020 Statement: An Updated Guideline For Reporting Systematic Reviews. *BMJ* **2021**, *372*, n71. [CrossRef] [PubMed]
20. Ordem dos Enfermeiros. Regulamento N.º 190/2015: Regulamento do Perfil de Competências do Enfermeiro de Cuidados Gerais; Diário da República n.º 79, Série II de 2015-04-23. 2015. Available online: <https://diariodarepublica.pt/dr/detalhe/regulamento/190-2015-67058782> (accessed on 2 April 2024).
21. Lenburg, C.B.; Klein, C.; Abdur-Rahman, V.; Spencer, T.; Boyer, S. The COPA Model: A Comprehensive Framework Designed to Promote Quality Care and Competence for Patient Safety. *Nurs. Educ. Perspect.* **2009**, *30*, 312–317. [PubMed]
22. Currey, J.; Massey, D.; Allen, J.; Jones, D. What Nurses Involved in A Medical Emergency Teams Consider the Most Vital Areas of Knowledge and Skill When Delivering Care to the Deteriorating Ward Patient: A Nurse-Oriented Curriculum Development Project. *Nurse Educ. Today* **2018**, *67*, 77–82. [CrossRef]
23. Jackson, S.A. Rapid response teams: What’s the latest? *Nursing* **2017**, *47*, 34–41. [CrossRef] [PubMed]
24. Topple, M.; Ryan, B.; Baldwin, I.; McKay, R.; Blythe, D.; Rogan, J.; Radford, S.; Jones, D. Tasks completed by nursing members of a teaching hospital Medical Emergency Team. *Intensive Crit. Care Nurs.* **2016**, *32*, 12–19. [CrossRef]
25. Santiano, N.; Young, L.; Baramy, L.S.; Cabrera, R.; May, E.; Wegener, R.; Butt, D.; Parr, M. The impact of the medical emergency team on the resuscitation practice of critical care nurses. *BMJ Qual. Saf.* **2011**, *20*, 115–120. [CrossRef] [PubMed]
26. Leach, L.S.; Mayo, A.; O’Rourke, M. How RNs rescue patients: A qualitative study of RNs’ perceived involvement in rapid response teams. *BMJ Qual. Saf.* **2010**, *19*, e13. [CrossRef]
27. Matthew, E. Rescuing the Deteriorating Patient. *Aust. Nurs. J.* **2010**, *17*, 31–33.
28. Jamieson, E.; Ferrell, C.; Rutledge, D.N. Medical Emergency Team Implementation: Experiences of a Mentor Hospital. *Med. Surg. Nurs.* **2008**, *17*, 312–316, 323.
29. Scholle, C.C.; Mininni, N.C. Learn Why Bedside Nurses Are Embracing This Lifesaving Innovation. *Nursing* **2006**, *36*, 36–40. [CrossRef] [PubMed]
30. Repasky, T.M.; Pfeil, C. Experienced Critical Care Nurse-led Rapid Response Teams Rescue Patients on In-patient Units. *J. Emerg. Nurs.* **2005**, *31*, 376–379. [CrossRef] [PubMed]
31. Penedo, J.; Ribeiro, A.; Lopes, H.; Pimentel, J.; Pedrosa, J.; Sá, R.; Moreno, R. Avaliação Nacional da Situação das Unidades de Cuidados Intensivos. Ministério da Saúde. 2013. Available online: <https://www.sns.gov.pt/wp-content/uploads/2016/05/Avalia%C3%A7%C3%A3o-nacional-da-situa%C3%A7%C3%A3o-das-unidades-de-cuidados-intensivos.pdf> (accessed on 2 April 2024).
32. Mesa do Colégio da Especialidade em Enfermagem Médico-Cirúrgica da Ordem dos Enfermeiros. Parecer N.º 09/2017: Transporte da Pessoa em Situação Crítica. Ordem dos Enfermeiros. 2017. Available online: https://www.ordemenfermeiros.pt/media/8249/parecer_09_2017_mceemc_transportepessoasituacacritica.pdf (accessed on 2 April 2024).

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