

# Mapping the skills of emergency room nurses at the Mantua ASST: designing the tool and method for cataloging knowledge and skills

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## ABSTRACT

**Introduction:** Mapping the skills of healthcare professionals plays a central role in quality assurance systems as it allows for the evaluation of staff and planning of professional development through the identification of skills and knowledge. The aim of the present work was the creation of a skills mapping tool for the Emergency Department (ED) nurse of the ASST of Mantua in order to have a vision of the knowledge and skills of the nursing group that allows to orient and develop training paths by developing the potential of the group.

**Materials and Methods:** a narrative review of the literature was performed to identify existing mappings of the skills of the ED nurse. A skills map was then created using the mappings found in the literature. The mapping was reviewed by a panel of experts, who evaluated each item using a score ranging from 0 to 2 (0: item inconsistent with the context, 1: not very coherent, 2: coherent). The skills were then divided into 'basic skills' (skills to be acquired as a priority for a new employee) and 'expert skills' (skills that can be acquired through experience, clinical practice and time) through a focus group.

**Results:** five mappings from international literature were identified. No mappings of emergency nurse skills were identified in Italy. A mapping was created using the Royal College of Nursing mapping subdivision. The skills were divided into three main sections: core skills, transversal skills and specific emergency care skills. For each of these sections, the domains were then identified, represented by the integration of two components (knowledge and skills), and the items from the narrative review documents were placed within these. The 276 items of the mapping were reviewed by an expert panel of 12 professionals. 9 items were found to be reformulated, 1 item to be eliminated and 11 items to be added. In a second review with the expert panel, all 20 added and reformulated items reached an average between 1.6 and 2. The focus group was formed by 5 professionals from the expert panel who identified 190 'basic' items and 92 'expert' items.

**Discussion:** the mapping created was calibrated on the ED of the ASST of Mantua and is therefore a situated context. In fact, the skills are closely connected to the context in which they are applied. The method used, however, allows a common vision in identifying the skills. Continuous review and updating of the standards will also be necessary to ensure that practice develops in line with the context of care.

**Key words:** framework, nurse, competence, emergency, clinical nurse specialist.

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## Introduction

The mapping of healthcare professionals' competencies plays a central role in quality assurance systems because it allows for the evaluation of staff and the planning of professional development through the identification of skills and knowledge. Today, organizations are asked to adapt the development of competencies to the current clinical context, where nursing care, increasingly complex, must readjust processes and organizational models through which professionals meet healthcare needs.<sup>1</sup> The quality of clinical competencies is closely related to the issue of outcomes, so healthcare organizations are called upon to establish models and reference tools for the analysis, mapping, and evaluation of professionals' abilities and knowledge.<sup>2</sup> The goal of creating a competency profile is to define the distinctive competencies of each area, *i.e.*, the specialized competencies for the specific work domain. Building a competency profile is a complex task; it is not just about compiling a list of activities or simply adding new tasks for the professional, but about selecting and agreeing, in a consensual manner, on shared competency standards among the various stakeholders involved in care. Competencies, however, are closely linked to the context in which they are expressed<sup>3-5</sup> and are defined as the demonstration of a complex combination of knowledge, skills, attitudes, performance, and values applied to the context.<sup>6</sup>

Emergency Departments (ED) are the front line for patients arriving at hospitals and are often chaotic due to the urgency of providing life-saving care to critically ill patients.<sup>7</sup> These environments are focused both on stabilizing individuals in life-threatening situations and treating a wide variety of different pathological conditions. Worldwide, there has been a progressive increase in the number of people seeking this service, alongside a decrease in resources and the capacity for hospitalization within individual hospitals.<sup>8,9</sup>

Nurses working in these contexts are required to possess the competencies to handle difficult situations that arise in EDs. The competencies must meet the needs of people of all ages and in any condition,<sup>9</sup> so a multidisciplinary team is necessary to ensure a mix of competencies that guarantees competent and safe care.<sup>10</sup> Each ED presents different areas that require distinct management and care for the patient by all staff. At least, in every ED, we can distinguish triage and brief intensive observation, as well as areas that can be distinguished based on the intensity of care for the patient's visit. According to the national guidelines,<sup>11</sup> periodic rotation of staff in these areas is useful to ensure a higher level of performance quality.

The national regulations also emphasize the need to use indicators and standards for verifying clinical risk in ED activities, especially in triage activities.<sup>12</sup>

## Objective

The primary objective of the study is to create a tool for mapping the competencies of ED nurses at the ASST of Mantua. The secondary aim of the project is to provide a tool to guide the professional's training, evaluation, and the onboarding of newly hired staff.

## Materials and Methods

To define the mapping of the ED nurse, a search was first conducted across several databases (PubMed, Cinhal, Scopus) to identify existing mappings. The main national and international emergency nursing websites cited in the articles were also reviewed. A

narrative review of the literature was then produced.<sup>13</sup>

Subsequently, a competency mapping was created by identifying the competencies from the mappings selected in the literature according to the guiding criteria of the Code of Ethics,<sup>14</sup> the Professional Profile,<sup>15</sup> and the basic and post-basic education of the nurse. To build the mapping, the structure of one of the documents already available in the literature<sup>16</sup> was used. The structure of the Royal College of Nursing document<sup>16</sup> appeared applicable to the context, as it allowed the inclusion of all the competencies identified in the other documents analyzed through the narrative review. After creating the mapping, it was reviewed by a panel of experts (nurses and coordinators from the three EDs of ASST Mantova). For the recruitment of experts, the nursing coordinators were contacted through corporate email to arrange a meeting. The email contained the purpose of the meeting, a list of contents, and a cover letter presenting the overall structure of the competency mapping. The drafted mapping document was also attached to the email. The coordinators were met in September 2022 in a meeting room at ASST Mantova. The developed mapping document and its objectives were presented to them through slides. The potential future applications in the specific context were explained, both as an evaluation tool and as a training planning tool. Finally, they were given a mandate to nominate, among their nursing staff, experts who met the following inclusion criteria: i) work practice in all areas of the ED: triage, high-intensity area, medium-intensity area, low-intensity area, urgent secondary transports, short intensive observation, and boarding area; ii) voluntary participation; iii) presence of at least one nurse from the triage pathway review group; iv) considered an expert nurse according to the coordinator.

The following were excluded: i) those without the required work experience (less than ten years); ii) those not qualified for all areas of the ED; iii) those unwilling to participate; iv) those not considered expert nurses by the coordinator.

The objective was to recruit at least one professional from the ED of Asola, two professionals from the ED of Pieve di Coriano, and five professionals from the ED of Mantova, until sample saturation was reached. After selection according to the inclusion criteria by the coordinators and voluntary participation by the nurses, the project, the designed tool, and the importance of expert involvement for document review were explained via email. Nurses were asked to evaluate each item of the ED competency mapping document using a worksheet that allowed them to assign a numerical value through a column placed next to the items and labeled 'evaluation score'. Experts could also add missing competencies using another worksheet that contained only the structure of the mapping, without the items, so that the expert could identify in which section and domain to place their additional competency. Experts were asked to evaluate each item of the ED competency mapping document according to the following evaluation score: 0: item inconsistent with the context, to be eliminated from the mapping; 1: item minimally consistent with the context, to be retained in the mapping but revised/reformulated; 2: item consistent with the context, to be retained unchanged in the mapping.

Anonymity of the experts (except for the coordinators) was preserved by sending emails to the coordinators, who subsequently forwarded them to the selected experts. No demographic or personal data were requested, both to guarantee anonymity and because such data were not an objective of the project. After receiving all the evaluations from the experts, the mean and standard deviation of each item were calculated. A separate sheet was also created to group all the additional competencies suggested by the experts. Based on the mean score of the items, they were either retained, revised, or eliminated: mean  $\leq 1$ : item to be eliminated; mean between 1.1 and 1.5: item to be revised/reformulated; mean

between 1.6 and 2: item to be retained.

The items identified for revision were reformulated by consulting the diagnostic-therapeutic care pathways of the operating unit, the triage pathways, and the guidelines adopted by the unit. All the items suggested by the experts were also added to the mapping. Once the document was revised according to the experts' first evaluation, the same panel of professionals was asked to re-evaluate the mapping. Only the revised and newly added competencies were submitted to the entire expert panel for review, using the same evaluation score applied in the first review of the document. In this way, feedback was also provided to the experts on the evaluations made by their colleagues, including the means and cut offs used to select the revised or eliminated items.

Subsequently, the identified competencies were divided into "basic competencies" and "advanced competencies" through a focus group. In this context, basic competencies are defined as those to be acquired as a priority in order to practice autonomously within the operating unit. These are the competencies that a newly hired professional must achieve in order to successfully complete the onboarding phase, and which all nurses in that unit are expected to possess. Advanced competencies, on the other hand, are those acquired over time, through education and clinical practice. These are not competencies possessed by all professionals in the unit; rather, they belong only to some staff members. For this reason, it is important to map them in order to preserve the heritage of such distinctive competencies within the team. The same panel of expert professionals included in the previous phase was once again involved. By engaging the same convenience sample, it was possible to rely on experts already familiar with the tool, having served as its reviewers.

To achieve the objective, a focus group was used to allow experts to meet and discuss together which competencies should be considered "basic" and which "advanced." Through this method, the professionals met for the first time, whereas in the earlier phases anonymity had been preserved within the group (with the exception of the coordinators, who, having nominated the experts, were already aware of their identities).

The group was asked: "Which items of the ED nurse competency mapping document should be considered 'basic'—that is, to be acquired as a priority by a newly hired nurse in order to successfully complete mentoring—and which items should instead be considered 'advanced,' meaning competencies that can only be acquired through education, practice, and experience?" This method of investigation was chosen because the objective of this phase was to explore the opinion drawn from the professionals' own experience on this topic.

## Results

Five mappings from the international literature were identified (FEN,<sup>17</sup> RCN,<sup>16</sup> NENA,<sup>18</sup> CENA,<sup>19</sup> AAENP & ENA<sup>20</sup>). Of the five selected tools, four (FEN,<sup>17</sup> RCN,<sup>16</sup> NENA,<sup>18</sup> AAENP & ENA<sup>20</sup>) identify competencies within them, while CENA<sup>19</sup> identifies practice standards. Each mapping was analyzed according to nine domains: clinical competence, communication, teamwork, management of environment and resources, professional development, leadership, legal principles and professional ethics, research, and quality through a narrative review process.<sup>13</sup> These domains were used for the critical analysis of studies derived from the CENA<sup>19</sup> mapping because a known reference framework was absent due to the diversity of the selected mappings, including their structure.<sup>13</sup> No mappings of emergency nurse competencies were identified in our country. A mapping was created using the structure of the

Royal College of Nursing mapping.<sup>16</sup> This format was employed because the RCN document, being the most comprehensive, was the only one that could encompass all the competencies identified in the other documents. Competencies were divided into three main sections:

Core competencies, defined as 'good nursing practice,' which constitute the foundation of care at all levels. The nurse's 'core,' *i.e.*, fundamental behaviors, must be acquired as a priority and maintained as the central nucleus.<sup>16</sup> Transversal competencies, *i.e.*, competencies applied in a general and cross-cutting way in any emergency care context, regardless of the type of care required at that moment.<sup>16</sup> Specific emergency care competencies, understood as competencies necessary for caring for patients in the emergency-urgency context; these are highly specialized and characterizing the professional.<sup>16</sup> For each of these sections, domains were then identified, represented by the integration of two components (knowledge and skills); within these, the items derived from the narrative review documents were placed. The domains identified for each section are: i) core competencies: professional behaviors, teamwork competencies, communication and educational competencies; ii) transversal competencies: patient assessment, pain management and assessment, medication management, patient handling, infection prevention and control, protection of adults and children, documentation management, prevention and management of aggression and violence; iii) specific emergency care competencies: care of adults with acute pathologies of the respiratory, cardiovascular, neurological, gastrointestinal, renal, endocrine, reproductive, and musculoskeletal systems, care of adults with minor pathologies of the upper and lower limbs, ophthalmologic, maxillofacial, and ENT conditions, spinal and back problems, minor wounds or burns; care of children and adolescents; care of individuals with mental illness; disaster and major event management.

The competency is not directly observable or quantifiable; therefore, it becomes essential to decompose it into its constituent activity elements according to the role of the professional<sup>21</sup>. Subsequently, all items identified in the documents under review were included in each domain, depending on whether they represented knowledge or a skill. Items that were not applicable to the Italian context due to legal regulations or because they pertained to functions of other professions were excluded. Each item present in the mapping includes its bibliographic reference in the last column. The mapping document comprises a total of 276 items.

Once the mapping was created, it underwent a review process by a panel of experts. The expert panel, recruited according to inclusion criteria, consisted of 12 professionals. The experts evaluated each item in the mapping using a scoring system, after which the mean and standard deviation for each item were calculated. Of the 276 items, 9 were identified for revision, with a mean score between 1 and 1.6, while one item received a score of 1 and was therefore eliminated. All other items had a mean greater than 1.6 and were retained.

Within the core competencies domain ("professional behaviors, teamwork competencies, communication and educational competencies"), one item was identified for revision, whereas no items required revision within the transversal competencies section. In the specific emergency care competencies, eight items required revision, specifically: six in the domain "care of adults with acute pathology," one in the domain "care of children and adolescents," and one in "care of individuals with mental illness." The only item scoring below 1.1, and thus eliminated, was "discuss professional and legal responsibilities regarding genital mutilation," which belonged to the specific emergency care competencies section under the domain "care of adults with acute pathology:



adults with reproductive system issues.” A total of eleven items were added by the experts, positioned within the appropriate sections and domains, as identified by the experts. The items proposed by the experts pertained to the transversal competencies and specific emergency care competencies sections. Specifically, three items were added to the domain “patient assessment,” one to “medication management,” one to “infection prevention and control,” one to “documentation management,” and one to “prevention and management of aggression and violence.” Within the specific emergency care competencies section, four items were added: three in the domain “care of adults with acute pathology” and one in the domain “care of adults with minor pathology/minor injury.” No items were added to the core competencies. After the first review, the document underwent a second evaluation by the expert panel. All 20 items that were added or reformulated achieved a mean score between 1.6 and 2. The mapping was therefore finalized with a total of 276 items. The highest standard deviation obtained was 0.95 and corresponded to the eliminated item, while the lowest standard deviation was 0 and occurred for 72 items. The document review was completed in February 2023 (*Supplementary materials*).

The identification of basic and advanced competencies was then undertaken. Five professionals from the expert panel participated in the focus group. The discussion among the five experts took place in April 2023 and aimed to determine which items from the mapping document should be considered “basic” and which “advanced.” Of the 276 total items in the mapping document, following the focus group discussion, 162 items were classified as “basic” and 114 as “advanced.” The main themes that dominated the focus group discussion were: i) knowledge and skills possessed by all nurses prior to entering the ED; ii) competencies essential for working independently in the ED; iii) skills and knowledge that can be acquired during the onboarding phase; iv) competencies not required at the beginning of the ED experience, specifically in the areas of short intensive observation and low-intensity care; v) competencies exclusive to triage.

During the discussion that led the group to identify basic and advanced competencies, many questions were raised by the professionals themselves. They repeatedly asked how to identify the items they had reviewed. To address this, they first determined which items were possessed by all nurses, regardless of context, experience, or ongoing and continuing education. They also questioned which items were applicable to newly graduated nurses. Subsequently, they established which items were essential to work independently and to complete the preceptorship in the ED. One member of the group emphasized that, at the beginning of the ED experience, the focus should be on competencies related to short intensive observation and the low-intensity care area, as these were the selected contexts for onboarding within the ASST of Mantua. The group then concentrated on this topic and, to complete the selection of “basic” and “advanced” items, identified those related to triage, which were therefore considered “advanced” a priori. The discussion was primarily guided by three members of the group, although all five actively participated. While there was no opposition regarding the themes developed during the focus group, debates arose concerning the labeling of certain items, particularly nine items that generated more extensive discussion. The results were eight advanced competencies in the domain “professional behaviors, teamwork competencies, communication and educational competencies”, seven advanced competencies in “patient assessment”, one in “pain management and assessment”, five in “medication management”, one in “infection prevention and control”, five in “protection of adults and children”, one in “documentation management”, six in “prevention and management of

aggression and violence”. Within the section “specific emergency care competencies,” the following were identified: thirty-four advanced competencies in “care of adults with acute pathology”, thirteen in “care of adults with minor pathology”, ten in “care of adults and children”, eleven in “care of individuals with mental illness”, twelve in “disaster and major event management”. Overall, there were 60 advanced skills out of 144 total skills, compared to 51 advanced knowledge items out of 132 total knowledge items. Advanced skills represented 41.6% of all skills, while advanced knowledge accounted for 38.6% (*Supplementary materials*).

## Discussion

The creation of the mapping began with a literature review aimed at identifying existing competency frameworks for ED nurses. The resulting narrative review<sup>13</sup> analyzed five international documents, highlighting both inevitable differences and multiple similarities, indicating that internationally shared standards may exist. Differences between the frameworks were also interpreted in light of the varying educational pathways for emergency nurses worldwide.<sup>13</sup> In Italy, although possessing a specific clinical master’s degree is not mandatory to practice as an ED nurse, the national guidelines<sup>11,12</sup> emphasize the need for ED staff to have a structured training pathway for managing clinical situations encountered in short intensive observation. This includes foundational training for ED practice (BLSD, ALS, ATLS, PBLs, PALS, adult and pediatric airway management, etc.) as well as ongoing training through quality improvement activities, including audits. Regarding triage, it is required that the activity be performed exclusively by adequately trained nurses with a minimum of six months of ED experience, in addition to certified qualifications in Basic Life Support for adults and children. Continuous training is also required for triage to maintain adequate performance levels.<sup>12</sup> In Italy, no competency frameworks encompassing all emergency nurses have been identified. This results in a lack of expected outcomes and the absence of a standard for ED nurse education.<sup>9</sup> Developing competency mappings aims to ensure safe practice and establish a standard for emergency nursing education.<sup>22</sup> The resulting document was organized into three main sections and fourteen domains and, after expert review, contained a total of 276 items. The structure and items were selected from international frameworks identified in the narrative review.<sup>13</sup> Items were chosen with reference to guiding and limiting criteria of nursing practice.<sup>23</sup> The section with the highest number of items is “specific emergency care competencies,” followed by “transversal competencies” and “core competencies.” The overall structure of the mapping follows the format of the UK document,<sup>16</sup> which allowed incorporation of all items identified from the literature. Notably, the items identified through the literature review and subsequent expert review reflect knowledge and skills entirely consistent with the tasks cited in the national guidelines<sup>11,12</sup> and align with all “specific conditions”<sup>12</sup> described in the ministerial documents, even though these were not directly considered in the mapping because they do not define nursing competencies. It is crucial to note that no universally adopted international framework exists to encompass all competencies across work settings.

The created mapping was calibrated to the EDs of ASST Mantova and is therefore context-specific. Competencies are closely linked to the environment in which they are exercised.<sup>3-5</sup> Nevertheless, the method employed allows for a shared perspective in identifying competencies. Identifying knowledge and skills within a specific setting enables targeted evaluation of personnel and supports professional development through tailored training.

The focus group allowed for the classification of items into two main categories. Identifying basic items represents the first step in constructing a training sheet for newly hired ED nurses. Further focus groups will be necessary to correlate items with onboarding and determine acquisition timelines.

The project results also indicated that creating a catalog identifying the knowledge and activities performed by a specific professional provides a comprehensive view of the training level of the nursing group under consideration. This approach allows for the design and development of training programs to address competency gaps and highlights distinctive competencies which, if not maintained and practiced, risk being lost.

The mapping document cannot remain static; it requires regular updating and review to support nursing practice, as competencies continuously evolve according to the needs of specific territories.<sup>24</sup> Competency standards are essential to ensure quality and safety in practice; however, overly "strict regulation" may limit critical thinking and innovation.<sup>9</sup> Conversely, the absence of reference standards may negatively impact the quality of patient care. Continuous review and updating of standards are necessary to ensure professional practice develops in alignment with the care context.<sup>9</sup>

## Limitations

The competency mapping document created includes a total of 276 items. The expert panel highlighted during the focus group that this represents both a strength and a limitation. The high number of items makes the tool highly detailed; however, this characteristic also limits its practical application. For a coordinator, evaluating each nurse using this tool becomes a highly demanding task. Nevertheless, for identifying training needs, the tool could provide a more precise overview. Another limitation emphasized by an expert concerns the context: although the tool was designed for the Mantova hospital structure, the three EDs have different characteristics, which impact the competencies required of professionals. An expert noted that in one of the hospital sites, certain items are not applicable because nurses lack experience in those areas, while other items could be further developed, as the absence of certain services requires ED nurses to respond to additional needs. This phenomenon is also reported in the literature, where it is recommended to adapt competency mappings to more rural settings.<sup>25</sup>

## Conclusions

Gaining a better understanding of the types of competencies possessed and the performance demonstrated by ED nurses is essential for establishing a foundation for contemporary emergency nursing in today's healthcare environment.<sup>10</sup> Through the narrative literature review and a two-round expert review, the competency mapping document for ED nurses was developed. This tool is intended to support professional evaluation and identify training needs. To ensure that the mapping accurately reflects actual competencies, it will need to be updated periodically, guaranteeing that the tool keeps pace with scientific advancements and practical updates. Furthermore, it will be necessary to continue refining the mapping to enable its effective implementation within operational units and to allow for initial application in evaluating its utility.

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#### Online supplementary materials

Table 1. Part of the mapping document for emergency room nurses at ASST Mantova. By way of example, the structure, macro-areas, domains and some corresponding items are shown with bibliographic references and characterised as "basic" or "advanced" items.

Sources: RCN - Royal College of Nursing; 2017. FEN – Faculty of Emergency Nursing; 2014. ENA - Emergency Nurses Association; 2017. CENA - College of Emergency Nursing; 2020. NENA - National Emergency Nurses Association; 2014. PDTA – Diagnostic, Therapeutic and Care Pathways (items derived from the PDTA in use in the Operational Unit). EXPERTS – items derived from the review carried out by experts.

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Availability of data and materials: the complete revised mapping is provided only as an example and in part as an attachment to this article. If you wish to consult the entire mapping, please write to the authors.

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