

# Exploring Requirements of the ‘Would Be’ Expert Cardiac Care Nurse

Hamideh Dehghani<sup>1</sup>, Khadijeh Nasiriani<sup>1</sup> & Masoud Negahdary<sup>2</sup>

<sup>1</sup> School of Nursing, Research Center for Nursing & Midwifery Care, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

<sup>2</sup> Yazd Cardiovascular Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Correspondence: Khadijeh Nasiriani, School of Nursing, Research Center for Nursing & Midwifery Care, Shahid Sadoughi University of Medical Sciences and Health Services, Yazd, Iran. Tel: 98-(913)-359-3437; Fax: 98-(353)-824-9705. E-mail: Nasiriani@gmail.com

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## Abstract

**Background:** Cardiovascular interventions have experienced extraordinary progress in the past decades. But it seems that preparation of cardiovascular nurses has not been in pace with the changes. This is while these nurses have a prominent role in the care and management of life-threatening diseases in these wards which can lead to reduced mortality. The present study aimed to explore the effective factors on training a cardiac care nurse.

**Methods:** This research is qualitative and applies inductive content analysis. Participants included 7 matrons and 50 nurses selected through purposive sampling method. Data was collected using semi-structured interviews and open questionnaires. Also, conventional approach to content analysis was used to analyze data.

**Results:** To have a qualified CCU nurse, the findings cover four main themes including specialist nurses (having appropriate personal and professional characteristics), acquiring comprehensive educational content (acquiring specialized cardiac, basic nursing, and general educational content), integrated educational approach (group education, individual education and special education methods), and administrative and organizational requirements (the necessity of recognizing the position of CCU nurses, allocation of material and intellectual benefits, educational and managerial monitoring of supervisors).

**Conclusion:** Since cardiac care nurses play an important role in ensuring nursing care quality in cardiovascular wards and can improve the care delivered to the patients, it is necessary for nurses to have appropriate professional and personal qualities. Therefore, nurses should have training on general, basic nursing, and specialist cardiac content through integrated educational approach. At the same time, managerial and organizational requirements should be established to maintain and improve their competencies and capabilities.

**Keywords:** education, cardiac care, nurse, inductive content analysis, qualitative study

## 1. Introduction

Cardiac care unit is one of the most important wards in hospitals requiring professional nursing services due to the critical condition of the patients. The nurses should learn special clinical skills to deliver high quality nursing care to patients. In other words, the most important characteristic of employees in these wards is having robust scientific knowledge and nurses who are not academically qualified should not be employed in these units (Nobahar, 2016). Another important factor affecting the quality of care is decision-making ability (Mosadeghrad, 2014). Clinical decision-making is an essential part of professional nursing practices and includes the analysis of data, making decisions and appropriate implementation of these decisions in the clinical arena. Such an ability to define, detect and solve nursing problems identifies the essence of the profession (Hagbagheri et al., 2004). Clinical decision-making is an integral part of professional nursing practice which distinguishes professional nurses from non-professional health care staff (White, 2003). An essential aspect of this is knowledge, skill and abilities of nurses at the same time. There are various equipment and devices in the cardiac care unit and nurses should learn how to use these technologies in order to provide good-quality clinical care (Taylor, 2011). Based on the above-mentioned points, the cardiac intensive care nurses have a special role and should have special skills. But it seems that the importance of the role of these nurses often has been based on anecdotal evidence. Therefore, credible evidence and research findings are needed to describe the role of these nurses and their requirements (Jones & Johnson, 2008). Some nurses who feel unprepared to take responsibility and provide care for patients in

CCU attribute it to lack of knowledge and skills (Farnell & Dawson, 2006; Gohery & Meaney, 2013). Kelly and Ahern's study in Australia also revealed that novice nurses do not have enough ability to accept their role (Kelly & Ahern, 2009). Other findings indicate that intensive care nurses note novice nurses' lack of knowledge and ability in their ward (Zamanzadeh et al., 2015). However, there is little information available about the attitude of cardiovascular nurses towards continuing professional education. Many nurses posit that they need to study more to keep their performance up-to-date. But, this information is not always available locally (Timmins, 2008). Researchers believe that cardiovascular interventions have made extraordinary progress in the past two decades. But it seems that preparing and training nursing workforce, for example in cardiac catheter laboratory, have not been proportional to the changes (Currey et al., 2015). Also, there is a need to develop nursing curriculum such as cardiac nursing based on nurses' feedback, patients' ideas and participation of the community (Albarran et al., 2013). Accordingly, given that there is no research evidence about the necessary requirements for having cardiac care nurses, and given the importance of cardiac care unit in treating patients and too much spending in this section which imply the need to empower the nurses in this ward, this study was conducted to explore the effective factors for having cardiac care nurses.

## 2. Methods

Having a professional nurse in cardiac intensive care unit is influenced by various factors. Understanding these factors involves heeding the nurses' own experiences, beliefs and values. Since there was no adequate information in this regard, the researchers chose a qualitative research method. Therefore this study is a qualitative research applying qualitative content analysis. Content analysis is potentially one of the most important research techniques in social science that analyzes data to identify it. It has also been applied to nursing research and training for analyzing a wide variety of data and having deep interpretation. The stages of qualitative content analysis in this study include:

- Defining the unit of analysis
- Data reduction
- Using the system of thematization
- Reforming the system of thematization based on the data
- Providing a report on qualitative data

This study was conducted in 2016. Participants in the interview were 7 matrons and those answering open-ended questions were 50 nurses working in cardiac care unit of Yazd hospitals. The matrons were selected through purposive sampling method. They were willing to participate in the study and had the ability to express their experiences about nursing education and training needs in intensive care units. In-depth, open and semi-structured interviews were used to collect data. Before the interview, the researcher would introduce himself/herself and present sufficient explanation about the significance, objectives and methodology of the study.

Interviews were conducted individually and started by asking two questions: "What are the characteristics of a professional nurse in CCU?" and "What training is needed to achieve this position?" Then, based on the responses and extracted data, exploratory questions were asked to obtain deeper information: like "Can you mention a real example about this educational need or the case you pointed out?" and "Please explain further." It should be noted that all interviews were conducted by the principal researcher. Participants were notified of the rough duration of the interview and interviews were recorded with participants' prior arrangements and consent. The interviews then were immediately typed verbatim in the first 24 hours and were analyzed as the main data. The analysis provided a guidance to continue data collection and analysis. Any ambiguity, potential complexity or question occurred to the researcher was recorded and dealt with in following telephone or live interviews with other participants. Data collection and analysis were simultaneously conducted and continuously compared. The duration of each interview was at least twenty minutes and at most two hours and ten minutes; the interviews were continued until data saturation. Since the environment in qualitative research is a real arena, i.e. where the process and experiences happen, the personnel room in CCU was selected for conducting the study.

Moreover, to collect data from nurses who were selected randomly, a questionnaire consisted of demographic characteristics (age, sex, education level, work experience and position) and an open-ended question, "As you have valuable experience in CCU, in what areas does a competent and professional nurse need learning? (Both medical and non-medical)", were dispatched to 50 participants by email, fax and mail.

Data analysis was performed using conventional content analysis approach. For qualitative content analysis of all the interviews and collected questionnaires, the encoding and inductive process was used. The aim of this method

is to build a model to describe the phenomenon conceptually. The concepts are extracted from the data. The audio files were first typed verbatim. In the preparation phase, an entire interview was chosen as the unit of analysis. To create a sense of immersion in the data, a precise readout was performed several times. In the next step, semantic units were extracted from the text of interviews and open coding was performed. Afterwards, categorization of the codes was continued based on similarity, coordination and abstraction until the main themes were obtained and reported.

Ethics in research was observed by informed consent, confidentiality of information, the right to withdraw from the study at any time, and the right to reclaim the recorded interview and the related text.

Various methods were used to increase acceptability and reliability of the data, including continuous observation, allocating enough time to collect data, and good communication with participants. In addition to the review, revision and approval of the manuscripts by researchers, the participants were requested to review the text of interviews and the related extracted categories and themes. Moreover, an external observer, who was a professional colleague in qualitative research, confirmed the process of coding and content/theme extraction.

### 3. Results

According to the findings, the primary extracted codes were 585. The integration and summarization of the codes were then performed and 130 codes were obtained. Afterwards, similar codes or those with similar meanings were included in a theme on the basis of shared characteristics. In this way, an initial classification was conducted and the data became more condensed.

Based on the analysis of the codes, to have an intensive care unit nurse the findings include four themes involving "A- specialist nurse, B- acquiring comprehensive educational content, C- integrated educational approach, and D-administrative and organizational requirements". The theme of "A- specialist nursing" includes the following subclasses: a- appropriate personal and b- professional characteristics. "B- Acquiring comprehensive educational content" includes the subthemes of a- acquiring specialized cardiac, b- Acquiring basic nursing educational content and c- Acquiring general educational content. The themes of "C- integrated educational approach" involve a- group education, b- individual education and c- special education methods. The theme of "D- administrative and organizational requirements" include the subthemes of a- the necessity of recognizing the position of CCU nurses, b- allocation of material and intellectual benefits, c- educational and managerial monitoring of supervisors (Table 1).

#### A. Specialist Nurse

Among the subthemes, "appropriate personal characteristics" is some features that all nurses should have, but a nurse working at CCU is in more need of these characteristics. These features, as acknowledged by the participants, include: having tolerance, carefulness, smartness, work ethic, lifelong self-learning, self-confidence, responsibility, lack of work and family conflict, and, most importantly, having healthy, normal physical and mental conditions. In this regard, the participants state that:

"CCU itself, as well as the patient and his/her family cause stress, so the nurse should be tolerant and shouldn't lose temper" (participant No. 6).

"As CCU is a stressful environment and speed is important, a nurse like ... couldn't bear the conditions and was forced to change her ward" (participant No. 6).

Another sub-theme is "appropriate professional characteristics" which means that CCU nurses should have a series of professional features which, according to the experiences of participants, include: Being experienced and trained, being skilled, have the ability to control one's and others' stress, loving the job of a nurse, ability to act quickly, to have sufficient understanding of the conditions of CCU, ability to adapt to critical conditions, extreme workload and the patient, and, most importantly, the ability to quickly and accurately predict and manage life-threatening heart problems of patients. In this regard, the participants state that:

"A CCU nurse must act quickly and scientifically. For example, when a patient experiences V-fib, the nurse must administer shock and wouldn't let the patient die until the resident arrives" (participant No. 1).

#### B. Acquiring comprehensive educational content

Another subtheme is "acquiring specialized educational content" which means that CCU nurses should have received and understood specialized training related to the ward and its conditions, patients and equipment. According to the participants, this training should be first and foremost about the theory and practice of cardiac care (ECG interpretation, detection of dysrhythms and blocks, all kinds of heart disease, myocardial infarction, heart failure, pulmonary edema, pulmonary embolism, cardiopulmonary resuscitation, cardiac surgery). But this

needs receiving basic science training (cardiovascular anatomy and physiology, physical examination of the cardiovascular system and related systems, cardiac drugs and their side effects, calculations, and interactions, and the care and feeding of cardiac patients). Afterwards, other topics such as the application and adjustments of the equipments (ventilator, electroshock, syringe pumps, balloon pumps, monitors, electrocardiograms, different types of cardiac pacemaker of cares) and medical diagnostic tests and their interpretation (chest x-ray, echocardiography, exercise stress test, Holter monitoring, CT angiography, myocardial perfusion imaging, coronary angiography, angioplasty, transesophageal echocardiography, getting familiar with a variety of DEVICE, CRT, ICD, cardiac electrophysiology and EPS ablation, electrolyte, cardiac enzyme and clotting time) must be learned. Another sub-theme of this theme was learning advanced monitoring (comprehensive examination of CCU patients, distinguishing angina, monitoring vital signs, hemodynamic monitoring, types of shock, interpreting arterial blood gas, management of critically ill patients until the arrival of the physician and management of patients with cardiac and other diseases (pulmonary, renal, brain tumor, increased intracranial pressure, dialysis)). In this relation, the participants state that:

“Special patients are admitted in CCU, patients who need special care. The most important basis of CCU is ECG monitoring; the nurse must have full knowledge of it and can quickly detect dysrhythms” (nurse No. 10).

“Sometimes the intern prescribes Metoral and Inderal and some nurses don’t know that they shouldn’t be taken together or they don’t know about the side effects” (participant No. 1).

“Sometimes a patient with arrhythmia who has operated a brain tumor comes and should be monitored 24 hours a day. We must know how to care for these patients, we must know about, say, signs of increased intracranial pressure” (participant No. 7).

Another subtheme was “acquisition of basic nursing educational content”; in other words, the nurse selected for CCU should be proficient in nursing science and basic nursing skills (writing reports, pain relief, nursing process, bedside care, review of patient files, the history of nursing, positions and oxygen therapy, etc.), be familiar with the ways of learning and patient education (teaching methods, educational content and study methods), professional ethics (familiarity with patient rights and professional ethics), safety (patient safety, personnel safety, occupational health, prevention and control of hospital infection, isolation methods), psychiatric nursing knowledge (principles of communication with patients and families, and colleagues, nursing and interdisciplinary principles, and principles associated with communicating with addicted patients and methods of increasing self-confidence, etc.), and be familiar with principles of nursing management (stress management, anger management, time management, nursing management, problem management, crisis management, familiarity with physical and personnel structure of CCU and with institutional policies). In this regard, the participants say that:

“Report writing is especially important in CCU” (participant No. 1).

“Sometimes CCU patients are addicted. I need to know how to deal with the patient and his family” (nurse No. 22).

“Acquiring general educational content” is another subtheme which, according to participants, involves learning English language, Internet and hospital information systems, medical terminology and fire fighting, and life skills. In this regard, participants comment that:

“Along with specialized training, we need to improve our English because the menus of all devices are in English” (nurse No. 38).

### C. Integrated educational approach

Another subtheme is “group education method”. The participants requested group training methods including scenario-based training, discussion-based training, etc. because they believed that they should discuss various issues especially related to the diagnosis and decisions about patients to achieve deep learning. “Individual training method” was another sub-theme that the participants mentioned. Given that nurses with different levels of knowledge work in the ward, such educational methods as peer learning, online education, and self-learning are helpful. In this relation, the participants state that:

“Education should be short, clear, use videos and memories, and put the personnel in context in order to ask questions and propose scenarios. For example, if this happens to the patient, what will you do? And then a discussion can follow” (participant No. 4).

“Some nurses are newcomers to CCU, these should be trained by an experienced nurse” (nurse No. 41).

Regarding the subtheme of “special education method” the participants acknowledged that the following points should be considered in training courses: training before practice, education proportional to the needs and level, active, practical, systematic, continuous, periodic and short-term training, multimedia training, training in real

environment within wards, having a valid certificate, a final evaluation with an appropriate criterion, providing manual or electronic content, and the necessity of attendance during the training course. On this, participants say that:

“People with prior training performed better. Those who took a test performed better. If the educational material is available in hard-copy, there will be enough time to study” (nurse No. 22).

#### D. Administrative and organizational requirements

Another subtheme was “the necessity of recognizing the position of CCU nurses”. Based on the experiences of participants, some measures need to be taken to improve the status of CCU nurses including the development and tariff of CCU nurse measures, rating knowledgeable and skilled nurses by supervisors, coworkers, and doctors, developing and updating professional status of CCU nurses. In this regard, participants state that:

“Special nurse have a unique role. If their performance is not correct, the provided care will be defective. But, unfortunately nursing staff is sometimes underestimated by the system or doctors” (participant No. 2).

“Allocation of material and intellectual benefits” was another subtheme related to both trained nurses and nurses attending training courses which should be followed by written and oral encouragement, financial incentives, calculating working and training hours, and annual evaluation. In this relation, the participants state that:

“When financial incentives are given for attending training courses, the nurses will be present. But I know some contract-based nurses who are not interested to attend training classes because they can see no financial or other advantages in it” (nurse No. 13).

Another subtheme was “educational and managerial monitoring of supervisors”. In line with this, the supervisors should monitor the performance of nurses and point out and resolve their defects. In this regard, the participants say that:

“Supervisors should ask questions from nurses, monitor them, both ask questions and teach them answers” (participant No. 3).

Table 1. The main themes and sub-themes of requirements of CCU nurses

| Main themes                                 | Sub-themes  |
|---|---|
| Specialist nurse                            | Appropriate personal characteristics<br>Appropriate professional characteristics  |
| Acquiring comprehensive educational content | Acquiring specialized cardiac educational content<br>Acquiring basic nursing educational content<br>Acquiring general educational content<br>Group education method |
| Integrated educational approach             | Individual education method<br>Special education method   |
| Managerial and organizational requirements  | The necessity of recognizing the status of CCU nurses<br>Allocation of material and intellectual benefits<br>Educational and managerial monitoring from supervisors |

#### 4. Discussion

Choosing qualified nurses for CCU and improving their knowledge and performance plays an important role in ensuring the quality of nursing care and leads to care delivery improvements. Although cardiovascular nurses have a crucial role in improving cardiac patients, it seems that their characteristics and special requirements have been neglected. In the study of Fridlund and Mårtensson (2004), they declare that cardiovascular nursing is quickly developing and that there is a lot of evidence about the effects of their performance in reducing the suffering of patients. However, there is not enough awareness about the extent and content of cardiovascular nursing education in Sweden.

Based on the experiences of the study participants, the four themes of specialist nurse, acquiring comprehensive educational content, integrated educational approach, and managerial and organizational requirements are

essential to have a CCU nurse. Timmins writes that cardiovascular nurses need ongoing training to perform their role, therefore professional organizations should strive to plan training courses for them (Timmins, 2008).

Based on study findings, a CCU nurse requires unique personal and professional characteristics. Although these characteristics are required for all nurses, they are more necessary for CCU nurses due to special conditions of their patients. Also other research argue that the roles and responsibilities of cardiovascular nurses are extensive and varied; they have various clinical, educational, managerial, and research responsibilities which are to be better understood (Roschkov et al., 2006).

Based on the findings, a CCU nurse should receive comprehensive educational content including specialized cardiac, basic nursing, and general educational content. In the study of Astin and co-workers, eight major themes were found while designing a curriculum for cardiovascular nurses. These themes include: (1) Principles of cardiovascular pathophysiology. Content including learning about anatomy, pathophysiology and common cardiovascular physical manifestations, including (a) atherosclerotic disease and related conditions (ischemic heart diseases, stroke and peripheral vessels), (b) heart rhythm and conduction disorders (tachy-brady arrhythmias, conduction defects), (c) structural abnormalities of the heart (grown-up congenital heart disease (GUCH), valvular disease), and (d) heart muscle disorders (infectious, inflammatory, acute and chronic heart failure, cardiogenic shock). (2) Optimizing cardiovascular health. Content including learning about cardiovascular risk assessment and implementation of preventive interventions along with teaching (a) the burden of cardiovascular diseases in Europe/world (health inequality in Europe and patterns of health inequality - disease in the lifespan), (b) correction of modifiable risk factors for cardiovascular disease through the lifespan and advances in genetic testing, (c) primary and secondary prevention strategies, (d) family and personal cardiovascular risk assessment, (e) an introduction to the theories and principles of behavior change, (f) interventions focused on the society, family and individual to promote healthy lifestyles and supporting adherence to prescribed medications, and (g) implementation of clinical nursing guidelines in practice. (3) Assessment, planning and care. Content including (a) assessment of cardiovascular health (taking a cardiac history), (b) diagnostic tests, including ECG-telemetry (non-invasive imaging such as echocardiography, magnetic resonance imaging, computed tomography, nuclear imaging and invasive imaging such as catheterization and angiography), (c) pharmacology in cardiovascular care (antihypertensives, diuretics, lipid-lowering drugs, anti-platelet agents, antithrombotics, antiarrhythmics: start, mechanism of action and interactions), and (d) the development, implementation and evaluation of a care plan using evidence-based clinical guidelines. (4) Principles and practices of individual- and family-centered care. Content including (a) individual- and family-centered nursing care, (b) decision-making and the barriers and facilitators of collective participation, (c) reflective performance (evidence-based nursing experience), and (d) interventions and tools used to support individual-centered care and to share decisions. (5) Education and communication. Content including (a) an introduction to the theory and principles of adult education, (b) theory of health literacy and health information needs, (c) theories and principles of family assessment, (d) principles and methods of effective communication, (e) introduction of educational/behavioral interventions, and (f) implementation of clinical guidelines in practice. (6) Emotional and spiritual wellbeing. Content including (a) emotional reactions during the illness (diagnosis, hospitalization, treatment, discharge and long-term care including lifestyle changes and adherence to medication), (b) incidence and prevalence of negative emotional responses and coping with the health- and life-induced stress (stress, anxiety, depression, hostility, anger, denial), (c) screening and mental health assessment, (d) nursing interventions in line with emotional and spiritual support, and (e) implementation of clinical guidelines in practice. (7) Physical well-being and comfort. Content including (a) the safety of patients in cardiovascular wards, (b) examining the prevalence, cause, assessment and management of cardiovascular symptoms: pain (acute and chronic pain, chest pain, pain from the surgical wound/intermittent claudication/contraction of limbs), shortness of breath (acute and chronic), gastrointestinal symptoms (liver, fatigue and sleep disturbance, palpitation and syncope, swelling, loss of appetite and indigestion), (c) drug side effects, (d) exercise and rehabilitation, (e) sexual consultation, (f) end-of-life care, and (g) implementation of clinical guidelines in practice. (8) Examining the quality of care. Content including (a) definitions of high quality nursing care, (b) identification of quality indicators, (c) the role of nurses, as part of the health care team, to promote a safety culture, (d) using methods of health care quality assessment and getting informed about the outcomes to do risk assessment, promote patient safety, inspection and evaluation behavior to improve the health care system, (e) the role of technology in promoting quality and safety in healthcare and treatment, and (f) effective communication, sharing decisions and cultural sensitivity (Astin et al., 2015).

As indicated in this study, this subtheme was the largest and included many educational aspects. According to other researchers, cardiovascular nursing is important in different fields of health including primary, secondary and tertiary care. Therefore, these nurses should obtain skills and knowledge in four areas of health promotion, cardiac disease prevention and rehabilitation, acute, chronic and episodic care and palliative care (Kumar & Preetha, 2012). Care for the elderly with cardiovascular disease needs having cardiovascular knowledge, knowing how to train

patients, performing health assessment, developing care plans, procedures to ensure the quality of care, etc. (Adams, 2010). Based on the results of Holm et al., cardiovascular nurses should be able to gather information about family medical history, physical examination, and diagnostic test results including genotypes (Frazier et al., 2009). Likewise, in another study, believe that cardiac nurses must be familiar with the ways to manage gastrointestinal bleeding in, for instance, heart failure patients with a device (Ballew et al., 2013). Cardiac nurses in Europe feel the need to improve their knowledge and performance in oral anticoagulant therapy to provide optimal service to cardiac patients and to minimize side effects (Oterhals et al., 2013). Coronary care nurses are responsible for evaluating and managing patients' symptoms often by using technology. Moreover, they should be able to develop therapeutic relationships with their patients, and, in the first step, they should provide vital physical and mental care in both the critical and relief stages of the disease (Jones & Johnson, 2008). Cardiac nurses need to have more knowledge and special practical training to provide information about sexual concerns and give sexual advice to cardiac patients (Jaarsma et al., 2010).

Based on the findings of this study, nurses need to learn basic skills such as mastery over English language. Other studies also point out that although cardiac nurses had a positive attitude towards evidence-based practice, their clinical performance followed their personal experience. Barriers to evidence-based practice was recognized to be inadequate training and lack of mastery over the English language and they believed that the solution was in execution of guidelines, providing ongoing training and higher accountability of clinical nurses (Bakalis, 2006).

Based on the findings, cardiac care nurses require integrated educational approach including the subthemes of group, individual and special education. To train patients about cardiovascular diseases, healthcare workers need to learn advanced communication skills, identify educational needs, competencies and motivation in adult education and counseling patients about their lifestyle (Svavarsdóttir et al., 2016).

Based on the findings, to have and retain CCU nurses we need to have managerial and organizational requirements including the necessity of recognizing the position of CCU nurses, allocation of material and intellectual benefits, educational and managerial monitoring from supervisors. Bakalis writes that although cardiac nurses had a positive attitude towards evidence-based practice, their clinical performance followed their personal experience. Barriers to evidence-based practice were inferior organizational position or its trivialization (Bakalis, 2006).

Since cardiac care nurses play an important role in ensuring nursing care quality in cardiovascular wards and can improve the care delivered to the patients, therefore, first it is necessary to select the nurses carefully so that they have appropriate professional and personal qualities. Then, they should receive training on general, basic nursing, and specialist cardiac content through integrated educational approach. At the same time, managerial and organizational requirements should be established to maintain and improve their competencies and capabilities

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