



A New View: Tele-Intensive Care Unit Competencies

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BACKGROUND Many hospitals have well-planned nursing competency assessment programs, but these are meant to measure competency in traditional bedside roles, not in tele-intensive care unit (tele-ICU) nurses practicing remotely.

OBJECTIVE To determine whether current tele-ICU programs have a formal competency assessment program and to determine when and how competency of tele-ICU nurses is assessed.

METHOD A 20-question survey was provided to a convenience sample of the 44 known tele-ICU programs nationally.

RESULTS Of the surveys distributed, 75% were completed and returned. A formal competency assessment policy for assessing nurses' competency at the time of hire, during orientation, and ongoing was in place at the workplaces of 85% of respondents. The most common methods for competency validation were performance appraisal and observation, although peer review and self-assessment also were used. Respondents identified the following competencies as the highest priorities for defining tele-ICU nurse practice: effective listening, prioritization, collaboration, and effective use of tele-ICU application tools.

CONCLUSION Although awaiting development of professional practice standards, many tele-ICU programs currently measure the competence of tele-ICU nurses through competency programs. (*Critical Care Nurse*. 2011;31[5]:17-29)

than 40 years.²⁻⁵ Carney and Bistline⁶ emphasized that the definition of competency depends on context and requires a process for using skills to demonstrate competency. Hospital competency programs are strongly influenced by The Joint Commission's standards and requirements. The Joint Commission defines competency assessment as "a determination of an individual's skills, knowledge, and capability to meet defined expectations" and mandates that competency assessment occur at the time of hire, during orientation, and on an ongoing basis.⁷ The assessment and demonstration of competency have become even more important in an era of heightened safety awareness.¹

The focus of this article is to discuss competency assessment in the tele-intensive care unit (tele-ICU) care model by presenting the results of a survey designed to highlight current competency programs in tele-ICUs across the nation.

A New Nursing Role: Telenursing

Many acute care hospitals have a well-founded and extensive

CE Continuing Education

This article has been designated for CE credit. A closed-book, multiple-choice examination follows this article, which tests your knowledge of the following objectives:

1. Identify 3 domains of competency assessment for tele-ICU staff
2. Describe the 8 nurse competencies of the Synergy Model
3. Discuss current practices in competency assessment for tele-ICU nurses

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Few would dispute that patients, patients' families, nurses, colleagues, professional organizations, and accreditation agencies expect practicing nurses to be competent. However, the definition of competency or competence and the ability to assess competency remains the topic of much discussion.¹ The required skill set for competent nursing has been expanding for more

competency assessment program to evaluate the competency of nurses performing in traditional roles. However, the expansion of telemedicine has spawned new roles for nurses. The various applications of telemedicine range from telephone consultation to such high-technology practices as remote surgery. As technology has expanded care opportunities once limited by distance, new care models have emerged. In 2001, Hutcherson⁸ identified 3 areas of telemedicine/telehealth that are affecting nursing: telephone triage/call center nursing; care that uses 2-way interactive video (especially in home health), and care that uses high-technology equipment (primarily in military settings).

Expansion of Telenursing Into Critical Care

Telemedicine was initially focused in the outpatient setting or on point-to-point physician specialty consultation. Exposure in the acute care setting was limited until the year 2000, when Sentara Healthcare, a 6-hospital system in southeastern Virginia, opened the first continuous monitoring and surveillance system, the eICU (Philips-VISICU, Baltimore, Maryland), for 50 critically ill patients in 5 ICUs across 3 Sentara hospitals.⁹ Commonly referred to as the tele-ICU, this is a model for leveraging scarce clinical resources while using information technology and unique approaches to communication and

collaboration to provide population-based care to critically ill patients in geographically disparate ICUs.¹⁰ Although each tele-ICU may vary in structure depending on the needs of the system, most employ experienced critical care nurses and intensivists in a centralized remote location. Patients' data are available and transferred via high-speed, protected connections to and from multiple ICUs, and a state-of-the-art audio/video system allows real-time visual assessment of the patient and direct collaboration with the bedside team.^{11,12} The tele-ICU staff uses continuous monitoring and virtual rounding (a thorough review of patient-specific data including vital signs, laboratory and radiology results, physicians' notes, flow sheet data, and a possible camera assessment) to identify actual or potential problems with patients and intervenes to prevent a crisis for a patient. Today, more than 1 million critically ill patients have been cared for by using tele-ICU systems.¹²

Providing Care Over Distance

The advent of nursing care over distance raised not only new nursing definitions (telenursing, telehealth nursing) but also issues at the very heart of traditional nursing. Clinicians asked, "Is nursing care provided electronically over distance actually the practice of nursing?"⁸ Although telenursing may be interactive, many believed that because it is not "hands

on," it could not be considered nursing practice. Boards of nursing were required to reevaluate and define the scope of nursing practice in the telehealth environment. The board of nursing stressed that nursing practice occurs at the point that a nurse uses the knowledge, skill, judgment, and critical thinking that is inherent in nursing education and that is authorized through the nursing license.

In 1997, The National Council of State Boards of Nursing¹³ was the first to define telehealth nursing as "the practice of nursing over distance using telecommunications' technology." Specialty organizations,¹⁴ including the American Telemedicine Association, offered additional clarification: "telehealth nurses are committed to leveraging technology and nursing expertise to provide quality nursing care, to delivering nursing expertise to those who need care, and to improving health and patients' outcomes. It can take place in a healthcare institution, a patient's home, or elsewhere. Telehealth nursing is intended to be broad based with nurses using telehealth technologies to provide care in an interdisciplinary manner, irrespective of geographic and time constraints."¹⁵

National nursing and telehealth professional associations are driving the development and dissemination of nursing telehealth practice standards.¹⁵ The legitimization of telenursing, particularly in the tele-ICU, continues as critical care organizations explore the implications of this model. In 2006, the American Association of Critical-Care Nurses (AACN) and the AACN Certification Corporation conducted an extensive baseline nursing job

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analysis to delineate the state of tele-ICU practice, resulting in a separate renewal certification category, CCRN-E, for CCRNs working exclusively or primarily in the tele-ICU environment.¹⁶ In April 2011, the AACN Certification Corporation announced that as a result of evidence from the most recent Critical Care Study of Practice and subsequent validation from a CCRN-E Exam Development Committee, the CCRN-E will be the credential awarded for passing the CCRN-E examination, thus providing experienced tele-ICU nurses a direct pathway to initial certification.¹⁷ Additionally, the 2011 AACN Tele-ICU Task Force has been convened with representation from a diverse group of tele-ICU programs. The task force has been charged with learning about the professional practice environment of the tele-ICU, providing understanding of the role of the critical care nurse in the tele-ICU environment and the professional needs of those nurses, and developing a plan to increase AACN's visibility and interaction with the tele-ICU professional nursing community.¹⁸

Identifying Telenursing Competencies

In its *Core Principles on Telehealth*, the American Nursing Association declared that the basic standards of professional conduct are not altered by the use of telehealth technologies. Professional standards must be focused on the responsibility to provide ethical and high-quality care, and each profession must develop its own processes for ensuring competencies in the delivery of health care through the use of telehealth technologies.¹⁹ Establishing,

monitoring, and enforcing competencies for telehealth nursing are the responsibility of individual nurses, employing organizations, and licensing and credentialing agencies.¹⁵

Currently telenursing competency is achieved primarily through vendor training, organizational orientation, self-training, and/or mentoring.²⁰ Table 1^{15,21,22} summarizes required telehealth competencies published by professional nursing organizations. Although many of the major components for competency achievement speak to the generalization of telenursing practice (eg, use of the technology, enhanced communication skills), they do little to elucidate the competencies required for tele-ICU nurses practicing in a specialty practice area providing care for critically ill patients.

For more than a decade, AACN has been reconceptualizing how critical care nurses provide their optimal contribution to care of patients and patients' families. In AACN's Synergy Model for Patient Care, 8 bedside nursing competencies (clinical judgment, advocacy and moral agency, caring practices, collaboration, systems thinking, response to diversity, facilitation of learning, and clinical inquiry; see Table 2 for further definition of terms) are matched with 8 characteristics of patients (resiliency, vulnerability, stability, complexity, resource availability, participation in care, participation in decision making, and predictability) that span the health-illness continuum.²³ The foundation of the Synergy Model is that the characteristics of patients and their families influence and drive the characteristics or competencies of the nurses. Synergy occurs when

a patient's needs or characteristics, clinical unit, or system are matched with a nurse's competencies.²⁴ As a professional model of care, the Synergy Model provides a framework that defines the nurse's relationship with the patient, other nurses, and the health care system.²⁵

The Synergy Model translates the competencies necessary for the bedside nurse providing direct care to the patient and the patient's family, but this relationship is significantly modified in the tele-ICU. A tele-ICU nurse is providing care remotely for approximately 35 patients and has limited interactions with patients' families via the camera system. Further, assignments are determined on the basis of the nurse's broad-based clinical competency and rarely on the basis of the unique characteristics of an individual patient. However, Table 3 illustrates examples in which the tele-ICU nurse meets the Synergy Model's competency requirements. To date, no research exploring the relationship between tele-ICU nursing and the Synergy Model has been published. Future research efforts could provide further insight into the demonstration of competency for various remote models of nursing care.

Emerging Competency Needs for the Tele-ICU

Although other vendor models are appearing, Philips-VISICU (Baltimore, Maryland) is the predominant vendor for tele-ICU technology, also known as the iICU.¹⁰ Tele-ICU operations directors from VISICU's current 42 customer sites have the opportunity to network on conference calls and at biannual

Table 1 Telehealth nursing competencies as specified by 3 professional organizations

Organization	Competency
American Association of Ambulatory Care Nursing, ²¹ 2007	Adapts to equipment and demonstrates efficient use of technology devices to perform role Uses clinical judgment and effective interventions to enhance patient/caller outcomes Is required to establish a trust relationship to elicit accurate patient/caller information and use effective interpersonal skills to engage in, develop, and disengage from a therapeutic interaction Documents telecommunications that reflect care specific to the actual or potential health care needs of the patient Accepts personal responsibility for maintaining and improving the knowledge and skills necessary to assess, prioritize, and manage patients Locates and uses appropriate resources to meet the needs of the patient Practices in accordance with an ethical, legal, and organization framework that ensures that the patient's safety, interest, and well-being are met
American Telemedicine Association, ¹⁵ 2008	Appropriate, effective, proficient, and safe use of the telehealth technologies/medical devices Understanding of the limitations of the technology Understanding of the knowledge, skills, and judgment necessary to identify, acknowledge, and interpret the changes in the practice arena that a distance factor creates Enhanced communication skills
International Council of Nurses, ²² 2008	Professional, ethical, legal Accountability Acquires training on information technology used in organization Assists remote site when needed to provide safe care Ethical practice Instructs patients about alternatives/options Care provision and management Assessment Adapts assessment processes and procedures to technologies in use Care management Assesses person/environment for appropriateness for use of telehealth Ensures patients' safety Displays cultural appropriateness Delegation and supervision Maintains accountability of delegated acts regardless of physical location Professional development Professional enhancement Acquires familiarity/capacity to use information and communication technology Refines protocols that affect patients and practice Continuing education Acquires general knowledge of technical operations of information and communication technology

vendor-sponsored conferences. Ongoing collaboration between the nursing directors and managers provides an excellent opportunity to build and share national practices on a multitude of clinical and operational issues.

As the tele-ICU programs evolved, a need for consistency in the identification of orientation nursing competencies emerged. A work group, comprising nurses from several eICU sites and hosted by the vendor, was charged with identifying basic eICU nursing competencies. The Philips-VISICU work-group product,

completed in 2006, identified competencies similar to those identified by the telenursing professional organizations that provided the basis for both orientation and ongoing competency assessment. According to the clinical program manager for Philips-VISICU (M. Hayes, RN, MS, MBA, oral communication, November 2006), the competency categories included computer literacy, communication, application skills (applying knowledge and technology to bedside care), critical thinking, and behavioral skills.

Exploring Current Tele-ICU Practice: The Survey

The need to set national practice standards and competency requirements for tele-ICU nursing remains a challenge. Although competency as defined by professional organizations provides some direction, it is unclear whether current tele-ICUs use a consistent approach to competency assessment. To explore the current status competency assessment as a measure of current tele-ICU practice, the author developed a survey tool.

Table 2 Nurse competencies defined in the American Association of Critical-Care Nurses' Synergy Model^a

Competency	Definition
Clinical judgment	Clinical reasoning, which includes clinical decision making, critical thinking, and a global grasp of the situation, coupled with nursing skills acquired through a process of integrating formal and informal experiential knowledge and evidence-based guidelines
Advocacy and moral agency	Working on another's behalf and representing the concerns of the patient, the patient's family, and nursing staff; serving as a moral agent in identifying and helping to resolve ethical and clinical concerns within and outside the clinical setting
Caring practices	Nursing activities that create a compassionate, supportive, and therapeutic environment for patients and staff, with the aim of promoting comfort and healing and preventing unnecessary suffering; includes, but is not limited to, vigilance, engagement, and responsiveness of caregivers, including family and health care personnel
Collaboration	Work with others in a way that promotes/encourages each person's contributions toward achieving optimal/realistic goals for patients and their families; involves intradisciplinary and interdisciplinary work with colleagues and community
Systems thinking	Body of knowledge and tools that allow the nurse to manage whatever environmental and system resources exist for the patient, the patient's family, and staff, within or across health care and non-health care systems
Response to diversity	The sensitivity to recognize, appreciate, and incorporate differences into the provision of care; differences may include, but are not limited to, cultural differences, spiritual beliefs, sex, race, ethnicity, lifestyle, socioeconomic status, age, and values
Facilitation of learning	The ability to facilitate learning for patients and their families, nursing staff, other members of the health care team, and the community; includes both formal and informal facilitation of learning
Clinical inquiry	The ongoing process of questioning and evaluating practice and providing informed practice; creating practice changes through research utilization and experiential learning

^a Nursing care reflects an integration of knowledge, skills, experience, and attitudes needed to meet the needs of patients and their families. The Synergy Model has identified 8 nurse competencies, each of which has additional dimensions based on level of nursing expertise.²³

The objectives of the survey were to answer the following questions:

- Do tele-ICUs have a competency assessment policy or procedure?
- Are competencies assessed during the hiring, orientation, and ongoing performance of tele-ICU staff and/physicians?
- How is each skill domain (technical, critical thinking, and interpersonal) assessed and validated?

The 20-question survey was designed to obtain demographic information on the structure of the tele-ICU as well as data on the spectrum of competency assessment methods. Questions regarding ongoing competency assessment

were based on the beliefs long held by del Bueno et al²⁶ and Alspach^{27,28} that competency assessment is about what employees can do, not what they know. The survey questions were reviewed for structure and content clarity by 2 operations directors before the survey was finalized.

A convenience sample of the 44 known tele-ICUs sites across the country (42 eICU programs and 2 non-eICU programs) were asked to participate in the survey. Each program director/manager received the survey purpose, completion instructions, and an e-mail link to access the survey tool. Although respondents remained anonymous, each program had the option to not participate by simply not completing and/or submitting the survey. To

simplify the data analysis, participants were encouraged to discuss the survey with staff, telephysicians, or others in the program, but to complete only 1 survey per program.

Tele-ICU Competency Survey: The Results

A total of 33 of the 44 surveys were completed, for a 75% response rate. A summary of the survey results, including demographic information, is provided in Table 4. Sorting the data on the basis of the size of the tele-ICU program had no significant impact on the overall survey results.

Demographic Data

The size of tele-ICU programs varies depending on the number of beds being monitored by the service,

Table 3 Demonstrating nursing competencies as defined in the Synergy Model when care is provided remotely

Competency	Examples from the tele-intensive care unit (ICU)
Clinical judgment	During virtual rounds, the tele-ICU nurse notes that the patient is experiencing a new onset of bradycardia with a 16-point reduction in systolic blood pressure. The nurse reviews the patient's pertinent data including the medical history, trends in vital signs, laboratory values, and any change in medications in the past 6 hours. Upon review of the nursing documentation, it is noted that the patient was given an unusually large dose of dexmedetomidine to achieve effect. The tele-ICU nurse is aware that the nurses in this ICU have limited experience with the use and titration of this medication and phones the bedside nurse to offer assistance. Together they review the side effects and titration of the medication, and the decision is made to decrease the dose. Within 2 hours, the patient's bradycardia has resolved with a return to baseline blood pressure.
Advocacy and moral agency	The ICU bedside nurse contacts the tele-ICU nurse to share her concerns about ongoing medical care of an elderly patient with an active do-not-resuscitate order and a living will. The bedside nurse is concerned that the patient's family is ignoring the patient's wishes regarding her end-of-life care and is demanding aggressive care. The patient's primary physician is unavailable, and the covering physician declines efforts to become involved. After reviewing the case with the bedside nurse, the tele-ICU nurse requests that the tele-intensivist review the case. After discussion with the bedside nurse, and a review of the case, the tele-intensivist contacts the covering physician. It is decided that the tele-intensivist will conduct a family meeting via teleconferencing capabilities to review care options. The tele-ICU nurse, in collaboration with the bedside nurse, arranges the family meeting. At the end of the meeting, the patient's family decides to withdraw aggressive care and focus on comfort measures.
Caring practices	The ICU nurse has been caring for a 19-year-old patient with complex trauma. Unfortunately, the patient's condition deteriorates until he has a cardiac arrest with unsuccessful resuscitation efforts. The tele-ICU nurse has been on camera throughout much of the situation. The ICU nurse has had very little opportunity to document care in the past 3 hectic hours but informs the tele-ICU that she is "up" for the next admission. The tele-ICU nurse imports data on vital signs for every 15 minutes of the past 3 hours, records all medications infused during resuscitation efforts, documents fluid intake and output and various observations such as catheter insertion into the electronic nursing record. The bedside nurse now needs only to review, edit as needed, and provide a second signature in order to be ready for an admission.
Collaboration	A 48-year-old patient is admitted to a rural ICU with severe agitation related to withdrawal of alcohol. The ICU nurse is concerned about the patient's safety and the safety of the staff providing care as the patient is not responding to current treatment. The ICU nurse calls the tele-ICU for assistance in patient management and discusses the situation with the tele-ICU nurse, who involves the tele-intensivist. The primary physician is consulted but unclear as to how to proceed and believes intubation and sedation may be the only options. The tele-intensivist discusses the potential use of clonidine as an agent to control agitation and prevent the need for intubation. Within 4 hours, the patient is at sedation goal and is eventually transferred from the ICU without ever being intubated.
Systems thinking	A 42-year-old woman in a community hospital has a cardiac arrest; the tele-ICU nurse (tele-intensivist not on duty) assists with the resuscitation efforts, which are successful. However, when the tele-ICU nurse raises the question of postresuscitation hypothermia, the bedside team appears unaware of this option. At the request of the ICU, the tele-ICU nurse notifies the on-duty intensivist at the tertiary care facility and arranges a transfer for the patient.
Response to diversity	The tele-ICU responds to the diversity of thought and standard of care differences that occur between rural, community, and academic/tertiary care facilities but must always provide support in a nonjudgmental manner. When a nurse in a rural ICU requests a physician order for potassium replacement for an elderly patient who is hypokalemic, the tele-ICU nurse reminds the tele-ICU physician not to order a potassium bolus as the pharmacist would be required to come into the hospital at 3 AM to make the solution. Given that the patient is able to take a regular diet, oral potassium was ordered instead.
Facilitation of learning	The tele-ICU nurse assists a new ICU nurse orientee during a tele-ICU observational experience. The tele-ICU identifies situations in which the tele-ICU can support the new employee and encourages the building of the collaborative relationship. Additionally, when the new orientee describes her inexperience in arterial blood gas interpretation, the tele-ICU nurse reviews results of arterial blood gas analysis on 9 different patients to assist the orientee to view those results in the context of different patient situations.
Clinical inquiry	A tele-ICU nurse notes a frequent documentation error that appears to be related to a new drug library in the intravenous infusion pumps. She informs both the ICU and the tele-ICU director of her observation. She agrees to attend a meeting in the ICU to decide how the tele-ICU can assist the ICU staff in avoiding the error.

Table 4 Summary of results from the survey on staff competency in the tele-intensive care unit (tele-ICU)

Variable	Results
Number of beds monitored in the tele-ICU	67% monitor 50-150 beds
Mean tele-ICU nurse to patient ratio	67% have ratio of 1 nurse to 30-40 patients
Tele-ICU nurse staffing model	56% use a mixed model (program has both dedicated tele-ICU nurses, and nurses who work both in the tele-ICU and at the bedside)
Mean tele-physician to patient ratio	55% have ratio of 1 physician to 51-100 patients
Use of support staff	85% have support staff for data entry and phone management
Written competency policy	85% have a written policy
Competency areas addressed in policy	66% address hiring 75% address orientation 63% are ongoing 31% are renewable 31% address physician competency
Hiring/orientation requirements, competency	91% require at least 3 years critical care experience 6% require CCRN or CCRN-E 78% have staff interview prospective hires 91% offer staff input into orientation evaluation 45% have tele-ICU nurses participate in new tele-physician orientation 62% have tele-ICU nurse provide input into tele-physician performance
Most common validation method for skills in the interpersonal domain	75%-90% use annual performance appraisal 58%-70% use direct observation
Most common validation method for skills in the critical thinking domain	87%-91% use annual performance appraisal 63%-69% use direct observation
Most common validation method for skills in the technical domain	53%-84% use annual performance appraisal 44%-72% use direct observation
Most important tele-ICU nurse competencies	90% cite effective listening skills 90% cite prioritize patient issues 90% cite ability to foster collaboration 87% cite effective use of the tele-ICU application tools

with a range from fewer than 50 beds to more than 400 beds. Two-thirds of respondents represented tele-ICUs that monitor 50 to 150 beds. Nurse to patient ratios are determined by the unique workflows or requirements of each tele-ICU program,²⁹ but most programs reaffirm the vendor-suggested ratio of 1 nurse to 30 to 40 patients.^{9,10,12,29,30}

Nurse staffing models can be dedicated tele-ICU positions (nurse

works full time in tele-ICU), shared staff (nurse works in both tele-ICU and local ICU), or mixed (combination of both models).^{11,30} Although survey results favor a mixed model, respondents' comments indicate that models shift depending on the applicants available and the growth of the program. Although 55% of tele-ICUs reported 1 physician per 51 to 100 patients (the vendor's recommendation),^{9,10,12,29} it is not

uncommon for programs to use a much larger ratio, with 2 tele-ICUs indicating 1 physician for 302 patients, and another, 1 physician for 260 patients. The data validated that most tele-ICUs (85%) employ support staff such as unit secretaries or health care assistants for data entry and/or phone management.

The Relationship Between Policy and Practice

The overwhelming majority (85%) of respondents indicated that they use a policy for competency assessment that may be part of their system's competency policy or a policy unique to their program. For the majority, the policy is specific to the tele-ICU nurses' competency assessment; far fewer (31%) address telephysician competency within their competency policy. Some indicated that physicians' competency is the purview of their medical affairs department or the credentialing committee.

Assessment of the competency of tele-ICU nurses begins at the time of hire (66%), continues during orientation (75%), and is ongoing (63%). Hiring requirements for tele-ICU nurses are quite similar (Table 4) in the tele-ICU community and the tele-ICU nurse is often involved in both the interview process (78%) and the hiring decision (72%). As in the ICU setting, fewer staff members (66%) have input into selection of the preceptor, but nearly all are involved in the actual orientation and evaluation of the new hire's performance. There is discussion in the literature of an unusually strong team bond between the tele-intensivist and the tele-ICU nurse.^{11,12,29-31} However, despite the strong team bond,

survey data indicate little opportunity for physicians to offer input into the hiring of tele-ICU nurses and vice versa. Once hired, it does appear the tele-ICU nurse has a significant responsibility in the tele-physician's orientation. About 65% of respondents indicated a mechanism for the tele-ICU nurse to provide ongoing feedback about the performance of the tele-physician.

Ongoing Competency Assessment/Validation

As noted previously, some tele-ICU nurses work both at the bedside and in the tele-ICU; maintaining clinical competence is then measured in their responsibilities to both the ICU and the tele-ICU. The ability of the dedicated tele-ICU staff to remain clinically competent, particularly given the role of the tele-ICU nurse as expert clinician, can be a concern for bedside staff.^{11,30,31} Some tele-ICU programs provide service for more than 20 hospitals, raising the question of whether the tele-ICU nurses should be expected to demonstrate clinical competency for 20 different competency programs. Most tele-ICUs (63%) do not require staff to complete clinical competencies for each organization, although 2 respondents indicated that tele-ICU staff must participate in competency assessment in more than 10 ICUs. Several programs stated that they have a systemwide competency program in which the tele-ICU participates, alleviating the need for multiple demonstrations.

Strategies used for dedicated staff to demonstrate clinical competencies included (1) a tele-ICU committee who identified and developed competency demonstrations for

high-risk/low-volume clinical issues and equipment, (2) mandatory continuing education credits in clinical topics, and (3) attendance at a hospital skills laboratory.

On average, the tele-ICU nurse spends between 2 and 10 hours annually per organization meeting validation criteria for ongoing competency assessment. Not only is competency validation time-consuming for tele-ICU nurses, respondents indicated that tele-ICU managers spend between 2 and 10 hours per employee on competency and performance evaluation/validation.

In compliance with literature recommendations, a variety of measures are used to validate nursing competency in the tele-ICU.^{26,27} The survey identified each competency domain as identified by del Bueno et al²⁶ (interpersonal, critical thinking, and technology) with criteria for ongoing competency evaluation and queried how each is validated within the tele-ICU (see Table 5). Although annual performance appraisal and observation were the most commonly used methods for competency validation, peer review and self-assessment were also regularly used. One comment indicated that input into competency assessment is also generated

Table 5 Domain competencies queried in survey on competency in tele-intensive care unit (tele-ICU)^a

Domain	Competency
Technology	Cognitive skills Critical care knowledge Psychomotor skills Technical understanding
Interpersonal	Communication Customer service Conflict management Ambassador skills Collaboration Team skills Audio/video etiquette
Critical thinking	Problem solving Time management Priority setting Planning Change management

^a del Bueno et al²⁶ identified 3 domains that corresponded to individual competency areas for potential validation. For the purpose of this survey, the respondents were asked to select from various methods (peer review, annual performance appraisal, self-assessment, observation, pre/post test, return demonstration, or not validated) to determine how competency was validated.

from ICU feedback within the system, but provided no insight into either the process or frequency of this input.

What Are the Most Important Competencies for Tele-ICU Nurses?

Respondents were asked to rate on a priority scale a list of 11 attributes (Table 6) or competencies derived from tele-ICU discussions in the literature.^{9-12,29-31} Although 8 of the 11 attributes were considered either "extremely important" or "important," the highest rated attributes (>85%) included effective listening skills, ability to prioritize patients' issues, ability to foster collaboration, and effective use of tele-ICU application tools. The success of the tele-ICU in achieving its goal of improved outcomes for patients relies on the ability to provide care in an ICU/tele-ICU collaborative environment.^{9-12,29-32} Without a high

Table 6 Eleven competencies or attributes of nurses working in the tele-intensive care unit (tele-ICU)^{a,b}

- Proficiency with each organization's hospital/clinical information systems
- Basic "Windows" skills
- **Effective utilization of the tele-ICU application tools**
- **Effective listening skills**
- **Ability to foster collaboration**
- Expert critical care knowledge base
- Patient advocacy skills
- Use of evidence-based practice
- **Ability to prioritize patients' issues**
- Ability to mentor others
- Conflict management skills

^a Based on data from Breslow,⁹ Jarrah et al,¹⁰ Myers and Reed,¹¹ Lilly and Thomas,¹² Stafford et al,³¹ and Zapatochny Rufo.³²

^b Survey respondents were asked to rate each attribute to determine the priority of the attributes. Competencies/attributes that were rated extremely important by more than 85% of respondents are **bolded**.

level of collaborative skills, a component of which is the ability to effectively listen to the concerns of others, the effectiveness of the program may be thwarted. Although expert knowledge is clearly necessary for the tele-ICU nurse to identify clinical issues, that knowledge is optimized when combined with the effective use of the tele-ICU (vendor-specific) tools such as the software alerts, the audio/visual system, and access to the clinical decision-making tools.

All nurses must be able to master the ability to prioritize patients' needs, but that skill is accentuated in the tele-ICU, where the nurse is caring for 30 to 40 critically ill patients per shift. Responding to and resetting priorities is a vital competency in the ability to manage the tele-ICU work flow. Of the 11 attribute options "Proficiency with hospital/clinical information systems)" and "Basic 'Windows' skills" ranked lowest on the survey priority rating.

Implications

The tele-ICU competency survey was not intended or designed as a

scientifically rigorous research study and as such has many flaws in design. Although a 75% response rate provides a good snapshot of tele-ICU practice, it cannot be assumed that the results are reflective of all tele-ICU programs.

Tele-ICU leaders have informally discussed the need for consistency and standardization of practice as a mechanism for patient safety or to meet organizational performance criteria, but currently have enjoyed little attention from the accreditation agencies that often drive the need for competency validation. However, the commitment to quality practice as determined by competency assessment and validation remains a strong value as demonstrated by the number of tele-ICUs with formal competency programs already in place or in the process of development.

The consistency with which the respondents identified the necessary tele-ICU competencies is also quite striking. Nurses working in the tele-ICU must adapt to providing patient care in a new environment remote from the patient and the patient's family; this environment requires competencies similar to those required at the bedside but with differences in applications.

One might assume, given the complexity of the technology that provides the basis for the tele-ICU, that staff must have computer

proficiency in order to be hired to work in such an environment. This expectation may actually act as a barrier for potential nursing applicants, given that tele-ICU programs recruit experienced ICU nurses only. All too often, clinical staff with the most clinical experience whose careers could be expanded in the tele-ICU are from the generation of nurses with the least computer experience. Results of this survey indicate that computer prowess is at the bottom of the priority list. Computer skills, although important for the smooth operation of the tele-ICU, can be learned and strengthened during the orientation process.

The desirable and necessary skills related to communication such as skilled listening and promoting collaboration are difficult to acquire if they are not already a prominent part of the clinician's practice. Nurses with a demonstrated lack of proficiency in skilled communication can be extremely detrimental to the collaborative efforts required to attain the best possible outcomes and thus may be unable to adapt to the requirements of the tele-ICU environment.

Competency assessment and validation remains complex in the tele-ICU environment, although the survey results clearly indicate that validation options exist for all domains (interpersonal, technical, critical thinking). Many tele-ICU nurses work both in the tele-ICU and at the bedside. As such, they are required to validate competency in both environments, often a time-intensive process that may also reflect significant use of resources and cost. Yet the relationship of this competency process to the ability to

achieve tele-ICU program objectives (eg, improved outcomes for patients) is unclear and requires further exploration.

Additional concerns relate to “dedicated” tele-ICU nurses who work only in the tele-ICU; will their lack of clinical practice and/or exposure contribute to declining clinical competency in the tele-ICU? Over what period of time will this erosion happen? What strategies must be used to prevent competency erosion? Survey results indicate that a variety of measures are used to validate clinical competence for both shared and dedicated tele-ICU nurses. Understanding the ICU’s expectations of the tele-ICU can provide assistance in further defining the competency needs. The survey raises additional questions that require further research to answer: (1) What is the role of the tele-ICU team in ensuring team competence? (2) What competency measures best validate tele-RN performance? (3) How will the new CCRN-E certification exam affect the performance of the tele-ICU?

Summary

The Health Resources Services Administration³³ recommends expanding telehealth as a way to improve patients’ care and patients’ access to health care providers. As ambulatory and outpatient telehealth programs are joined by inpatient programs, such as the tele-ICU, nursing roles are also morphing into

new ways of caring for patients. Regardless of practice environment, nurses are held accountable to evidence-based clinical standards and the competencies necessary for the delivery of safe care to their patients and the patients’ families. Tele-ICU nursing competencies must marry the current telenursing standards with critical care standards. The core competencies for tele-ICU nursing identified in this survey echo many of the skill sets elucidated in the AACN’s Healthy Work Environment: skilled communication, true collaboration, and effective decision making. Further research will be vital to providing the evidence base necessary for the development of tele-ICU nursing standards, but this survey does demonstrate the commitment of tele-ICU programs to development and implementation of the competency programs necessary to ensure safe care of patients and their families. The final comment of the survey sums up the issue of tele-ICU competencies, “They are an ever-evolving process.” **CCN**

eLetters

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Financial Disclosures
None reported.

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To learn more about tele-ICU, read “A Second Set of Eyes: An Introduction to Tele-ICU” by Susan Goran in *Critical Care Nurse*, 2010;30(4): 46-55. Available at www.ccnonline.org.

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A New View: Tele-Intensive Care Unit Competencies

Facts

The Health Resources Services Administration recommends expanding telehealth as a way to improve patients' care and patients' access to health care providers. As ambulatory and outpatient telehealth programs are joined by inpatient programs, such as the tele-ICU, nursing roles are also morphing into new ways of caring for patients.

Regardless of practice environment, nurses are held accountable to evidence-based clinical standards and the competencies necessary for the delivery of safe care to their patients and the patients' families. Tele-ICU nursing competencies (see Table) must marry the current telenursing standards with critical care standards.

Table Telehealth nursing competencies as specified by 3 professional organizations

Organization	Competency
American Association of Ambulatory Care Nursing, 2007	<ul style="list-style-type: none"> Adapts to equipment and demonstrates efficient use of technology devices to perform role Uses clinical judgment and effective interventions to enhance patient/caller outcomes Is required to establish a trust relationship to elicit accurate patient/caller information and use effective interpersonal skills to engage in, develop, and disengage from a therapeutic interaction Documents telecommunications that reflect care specific to the actual or potential health care needs of the patient Accepts personal responsibility for maintaining and improving the knowledge and skills necessary to assess, prioritize, and manage patients Locates and uses appropriate resources to meet the needs of the patient Practices in accordance with an ethical, legal, and organization framework that ensures that the patient's safety, interest, and well-being are met
American Telemedicine Association, 2008	<ul style="list-style-type: none"> Appropriate, effective, proficient, and safe use of the telehealth technologies/medical devices Understanding of the limitations of the technology Understanding of the knowledge, skills, and judgment necessary to identify, acknowledge, and interpret the changes in the practice arena that a distance factor creates Enhanced communication skills
International Council of Nurses, 2008	<ul style="list-style-type: none"> Professional, ethical, legal Accountability <ul style="list-style-type: none"> Acquires training on information technology used in organization Assists remote site when needed to provide safe care Ethical practice <ul style="list-style-type: none"> Instructs patients about alternatives/options Care provision and management Assessment <ul style="list-style-type: none"> Adapts assessment processes and procedures to technologies in use Care management <ul style="list-style-type: none"> Assesses person/environment for appropriateness for use of telehealth Ensures patients' safety Displays cultural appropriateness Delegation and supervision <ul style="list-style-type: none"> Maintains accountability of delegated acts regardless of physical location Professional development <ul style="list-style-type: none"> Professional enhancement <ul style="list-style-type: none"> Acquires familiarity/capacity to use information and communication technology Refines protocols that affect patients and practice Continuing education <ul style="list-style-type: none"> Acquires general knowledge of technical operations of information and communication technology

Goran S. A new view: tele-intensive care unit competencies. *Crit Care Nurse*. 2011;31(5):17-29.

CE Test Test ID C115: A New View: Tele-Intensive Care Unit Competencies

Learning objectives: 1. Identify 3 domains of competency assessment for tele-ICU staff 2. Describe the 8 nurse competencies of the Synergy Model 3. Discuss current practices in competency assessment for tele-ICU nurses

1. At what point in the hiring process does the Joint Commission require competency assessment?

- a. At the time of hire, during orientation, and annually
- b. Only during orientation
- c. At the time of hire, during orientation, and on an ongoing basis
- d. At the time of hire and annually

2. Which of the following is included in e-ICU virtual rounding?

- a. Reviewing laboratory and radiology reports
- b. Reviewing vital signs only
- c. Watching the onsite nurse perform dressing changes
- d. Talking to the family via Web cam

3. Which of the following is *not* a means of obtaining or maintaining competency for tele-ICU nursing staff members?

- a. Vendor training
- b. Organizational orientation
- c. Master's level college program
- d. Self-Training/Mentoring

4. According to the Synergy Model, which of the following is a nurse competency?

- a. Resiliency
- b. Vulnerability
- c. Collaboration
- d. Complexity

5. According to the Synergy Model, which of the following is a patient characteristic?

- a. Advocacy
- b. Response to diversity
- c. Clinical inquiry
- d. Resource availability

6. Assignments in a tele-ICU are based on which of the following?

- a. Individual patient needs
- b. Broad-based clinical nursing competency
- c. Individual nursing specialty skills
- d. Identified family needs

7. Which of the following are the 3 domains of tele-ICU competencies?

- a. Critical thinking, interpersonal, therapeutic
- b. Critical thinking, technological, therapeutic
- c. Critical thinking, interpersonal, technological
- d. Technological, interpersonal, therapeutic

8. Which of the following competency skills for tele-ICU are included in the American Telemedicine Association standards?

- a. Enhanced communication skills
- b. Instructing patients about alternative options
- c. Locating and using appropriate resources to meet the needs of the patients
- d. Adapting assessment processes and procedures to technological use

9. According to the survey results, which competency did 85% of the respondents rate as extremely important?

- a. Basic Windows skills
- b. Expert critical care knowledge skills
- c. Conflict management skills
- d. Effective listening skills

10. The tele-ICU nurse imports data and provides remote documentation from the resuscitation efforts of a trauma patient, giving the ICU nurse time to spend time with the patient's distraught family. This is an example of which Synergy Model competency?

- a. Caring practice
- b. Clinical inquiry
- c. Advocacy and moral agency
- d. Clinical judgment

11. The tele-ICU nurse recognizes a patient has a need for a therapy not provided by the community hospital but available at the tertiary medical center and helps facilitate a transfer. This is an example of which Synergy Model competency?

- a. Facilitator of learning
- b. Systems thinking
- c. Caring practice
- d. Advocacy and moral agency

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