Critical Care Nurse Training Standards Task Group Final Report

Critical Care Secretariat

Ontario

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Executive Summary

In 2004/05 the MOHLTC launched the Critical Care Transformation Strategy to improve quality of care and system performance in adult critical care services in Ontario, with an emphasis on investments that improve access, quality and system level resource management. The Final Report of the Ontario Critical Care Steering Committee (March 2005) recommended that "professional staff working in critical care should be required to meet standards and core competencies that are recognized provincially" (page 70). Core to improving access and quality is the recruitment and retention of critical care nurses. Nursing education occurs at the generalist level, and it has historically been the role of employers (i.e. hospitals) to provide specialty training.

Key barriers that currently exist include:

- financial (on the part of organizations related to the extensive training needs of critical care nurses)
- geographical – specialty training in academic settings is only available in selected regions of the province, resulting in nurses having reduced access to training
- access and flexibility – most training programs are offered in a very rigid format, discouraging nurses from seeking opportunities in critical care
- lack of standards and standardization leads to redundant training of nurses as they move between organizations

The recommendations in this report aim to reduce barriers, for nurses and employers, to specialty nursing training.

In October 2005, the Ontario Critical Care Expert Panel established the Critical Care Nursing Training Standards Task Group to identify and articulate adult critical care nurse core competencies and training standards for Ontario. These standards are nuanced to reflect the varied needs of different levels of critical care service provision as identified in the Committee Report (Level 1, 2 and 3 Critical Care).

The Task Group completed the following activities to prepare core competencies and standards in critical care nursing:

- A snapshot survey of the use of competency based standards and current training programs/methods in adult critical care units in Ontario.
- An inventory of the critical care nurse training programs and critical care nursing standards employed across Ontario.
- A review of the scientific literature regarding:
    - standards of care (including the standards provided by the Canadian Association of Critical Care Nurses);

    - the evidence base for teaching/learning methods most effective for nurses;
    - outcome evaluation related to standards development and implementation.
- A review of how comparable jurisdictions have addressed standards for nurse training in critical care.
- An analysis of cost of current and proposed critical care nurse training models.

The snapshot survey of Ontario critical care units demonstrated that a majority of units base their training programs on the standards of the Canadian Association of Critical Care Nurses (CACCN) standards and College of Nurses of Ontario (CNO), most units have an "in-house" training program for critical care nurses, and there is considerable variation in the duration of didactic and clinical training, with an average across the surveyed units of 3 weeks (in total) spent on education for nurses. This variability is compounded by the fact that there are geographical differences in the resources available to support training through college-based programs, with the majority of these programs in southern Ontario. A survey of the college-based critical care nursing programs also demonstrated significant variability in duration, content and method of offering (i.e. full time, part time). Given the prevalence of "in-house" training programs, organizations of the Task Group members were sampled to provide more detailed examples of the variations in training.

As a result of these survey results, the Task Group recommends that hospital-based and college-based programs be audited to evaluate the quality and content of didactic and clinical training and that the results of these audits be used to fund appropriate training for critical care nurses throughout the province. Training should be supported only for those sites whose education programs meet the standards developed by the Task Group, thus contributing to the creation of a portable nurse credential.

Of particular concern is the geographic variability of training and the need to create access to nurses practicing in rural and remote regions of Ontario. The Task Group recommends the development of an e-learning strategy leading to certification in critical care nursing. This e-learning strategy could also provide additional access to critical care training to all Ontario nurses, regardless of location, and provides a flexible, self-paced learning method. The e-learning strategy should be offered through the college system, lead to a credential in critical care nursing, and ideally provide transfer credits toward higher education. The e-learning strategy should be developed in partnership with the Nursing Secretariat.

The *Standards for Critical Care Nursing in Ontario* proposed by the Task Group are competency based and build on and integrate the standards of CACCN and CNO and represent competent, safe, and ethical patient care. These Standards should be used as framework for both critical care curriculum (at both the hospital and college level) and assessment of clinical practice. The Task Group recommends that all hospitals develop a process to implement and evaluate these Standards, and adapt them to incorporate the philosophy, beliefs, and values of individual hospitals.

The process for implementation and evaluation of Standards should include tools for the evaluation of competencies both after orientation and while working in critical care areas. The Task Group also recommends that the Standards be reviewed and maintained by a clearly defined Committee supported by the Critical Care Secretariat and made up of nursing experts.

To support nurses already practicing in critical care, the Task Group recommends development of different pathways, which should include a process of evaluation of nurse's prior learning and a method for granting credit for this learning. The development of an Objective Structured Clinical Examination (OSCE) would be one tool to assess and grant credentials to nurses, as well as allow for the placement of nurses into existing programs to further develop their skill set.

The Ministry should provide support for nurses and for hospitals to meet core competencies as set out by the standards. A made in Ontario solution would include development of a strong, flexible, college-based critical care training program for nurses to decrease the duplication of costs throughout the system. Ideally, this critical care nurse education should occur in colleges with coordination and/or partnership with local hospitals on the design, content, and timing of college critical care courses to reduce the practice-theory gap.

Implementation of these recommendations will create access to valuable training, ensuring that nurses practice to full scope, and providing an important foundation to the overall Critical Care Strategy. The innovative strategies articulated in this report, including an e-learning solution and the development of a critical care nursing OSCE, will create access to education and ensure that Ontario has an expert and sustainable nursing workforce for the future.

Introduction

1.1 Background

1.1.1 Critical Care Transformation Strategy and Critical Care Nurse Training

In 2004/05, MOHLTC launched a four-year Critical Care Transformation Strategy as part of the broader Access to Services and Wait Times Strategy to improve quality of care and system performance in adult critical care services in Ontario. As part of Year One of the strategy, MOHLTC established the Ontario Critical Care Steering Committee (OCCSC) and gave it the mandate of conducting a comprehensive review of the state of these critical care services and of preparing recommendations for a system-wide transformation. The Committee's Final Report, which was presented to the Minister in March of 2005, included 33 recommendations for improving adult critical care service delivery in Ontario. More critical care beds were not the sole answer; rather there was an emphasis on investments that improve access, quality and system-level resource management.

Amongst its concerns, the Committee identified the need to ensure that "professional critical care staff meet provincially accepted standards and core competencies" (p. 70). The training of nurses occurs at a generalist level. Specialty training, such as critical care training, occurs at the postgraduate level and is usually determined by the needs of employers. With respect to critical care nurse training, the Committee noted that:

Currently, individual hospitals provide training programs either on their own or in affiliation with local educational institutions. Since these programs vary across the province, it is suspected that staff completing training may not all have the same competencies. A standardized prototype education program needs to be developed that will support provincial critical care standards and core competencies. (p. 70)

The Committee presents three recommendations to address this concern:

> **Recommendation 21** – The Committee recommends that professional staff working in critical care should be required to meet standards and core competencies that are recognized provincially.
>
> **Recommendation 23** – The Nursing Secretariat of the Ministry of Health and Long-Term Care, the College of Nurses, the Registered Nurses' Association of Ontario and academic partners should develop a strategy for the recruitment, retention and training of critical care nurses and other professional staff in Ontario that includes opportunities for critical care internships, enhanced mentorship, and team and leadership training.
>
> **Recommendation 25** – The critical care community – in partnership with the Nursing Secretariat of the Ministry of Health and Long-Term Care, professional regulatory colleges and other groups – promote regulatory changes in the scopes of practice for all healthcare professionals who work in critical care to maximize their knowledge and skills.

The Committee makes special mention of the idea that "leadership, management and team skills should be recognized as core competencies to work in critical care, and included in the standardized prototype education program."

Following the acceptance of the Committee's Final Report, MOHLTC established the Ontario Critical Care Expert Advisory Panel (Expert Panel), under the direction of Dr. Alan Hudson (Lead, Access to Services and Wait Times Strategy) to oversee all aspects of the Critical Care Transformation Strategy.

Working with the report's 33 recommendations, the Expert Panel proposed an implementation strategy comprised of 7 components, one of which is a comprehensive plan to address Health Human Resource Issues in critical care. The need for the Ontario Critical Care Nurse Training Standards Task Group was identified as part of this strategy component.

1.2 Critical Care Nurse Training Standards Task Group

1.2.1 Mandate

The Ontario Critical Care Expert Panel established the Critical Care Training Standards Task Group to identify and articulate adult critical care nurse core competencies and training standards for Ontario nuanced to reflect the varied needs of different levels of critical care service provision as identified in the Committee Report (Level 1, 2 and 3 Critical Care).

The recommended elements of the Level of Acuity, as identified in the final report of the Ontario Critical Care Steering Committee are as follows:

Level 3	• Service to meet the needs of patients who require advanced or prolonged respiratory support alone, or basic respiratory support together with the support of at least two organ systems.
Level 2	• Service to meet the needs of patients who require more detailed observation or intervention including support for a single failed organ system, short-term ventilation, post-operative care, or patients "stepping down" from higher levels of care. • Patient transfer agreements and patient stabilization/transfer protocols to transfer patients to a Level 3 service. • Management may involve remote support provided in collaboration with a Level 3 service (i.e., telemedicine, eICU).
Level 1	• Service to meet the needs of patients at risk of their condition deteriorating, or those recently relocated from higher levels of care, whose needs can be met on an acute ward with additional advice and support from a critical care team. • Patient transfer agreements and patient stabilization/transfer protocols to transfer patients to Level 2 or 3 services as required. • Management may involve remote support provided by a Level 3 service (i.e., telemedicine, eICU).

Based on these standards, the Task Group will advise the Critical Care Secretariat in the dispersal of critical care nurse training funding in partnership with the Ministry's Nursing Secretariat.

1.2.2 Membership

Jocelyn Bennett (Program Director, Clinical Specialties, Mount Sinai Hospital) and Wendy Fortier (Clinical Director, Critical Care, The Ottawa Hospital) are the co-chairs of the Critical Care Nurse Training Standards Task Group. They are highly skilled and experienced critical care nurse administrators. The Task Group members are experienced and knowledgeable critical care nurses, administrators and clinical educators. They represent a geographically diverse sample and work in critical care areas offering different levels of service provision (Level 1, 2 and 3 Critical Care).

The following is a list of Task Group members (see Appendix A for detailed contact information):

- Heidi Barrett (Mount Sinai Hospital)
- Debra Carew (Sunnybrook and Women's College Health Sciences Centre)
- Lana Dunlop (St. Thomas Elgin-General Hospital)
- Annette Ellenor (Nursing Secretariat)
- Maude Foss (University Health Network)
- Wendy Fucile (Peterborough Regional Health Centre)
- Glenda Hicks (Sudbury Regional Hospital)
- Judy Kojlak (London Health Sciences Centre)
- Brenda Lambert (St. Thomas Elgin-General Hospital)
- Patricia Hynes (Mount Sinai Hospital)
- Lina Rinaldi (Trillium Health Centre)
- Eleanor Rivoire (Kingston General Hospital)
- Irene Travale (Hamilton Health Sciences Centre)
- Brenda Weir (Northumberland Hills Hospital)
- Sharon Slivar (The Ottawa Hospital)

Definitions

Certificate in Critical Care Nursing:

This is a certificate awarded by colleges in Ontario to nurses who successfully complete a college-based critical care program. The qualifications and credentials required to receive the certificate varies across colleges.

Certification Credential for Critical Care Nurses, CNCC(C):

This specialty certification, administered by the Canadian Nurses Association, is a voluntary program that allows nurses with 2 years of experience in critical care to build on the foundation of their Canadian RN registration and their clinical experience in critical care. Certification helps critical care nurses stay current by testing their specialized knowledge and skills. It also validates their competency in critical care settings. Certified nurses meet rigorous requirements to achieve the CNCC(C) designation. The exam to achieve certification focuses on knowledge assessment. By taking this exam, nurses demonstrate their commitment to a national standard of professional competence. (http://www.cna-nurses.ca)

Clinical Training:

Clinical training refers to training in the clinical setting. Students learn through hands-on experience, including interaction with critical care nurses and other members of the critical care multidisciplinary team. They are usually partnered with experienced nurses to be safely supervised and guided in their learning. A clinical instructor may or may not be present to monitor the progress of and provide support to the learner.

College-Based Critical Care Nurse Training Program:

This is a program to train nurses to work in the critical care setting, which is designed and taught by an educational facility. Program design and course time (ie. length of didactic and clinical components) and content depends on the program developer. Didactic training takes place in the educational facility. Clinical training takes place in the hospital setting. Some colleges develop programs in cooperation with hospitals and their needs; other college programs are developed independent of hospital input.

Competence:

The ability of a nurse to integrate the professional attributes required to perform in a given role, situation, or practice setting. Professional attributes include, but are not limited to knowledge, skill, judgment, attitudes, values, and beliefs (College of Nurses of Ontario, 2003).

Competencies:

Competencies are statements describing behaviors that nurses believe are important for providing safe, effective, and ethical care. They reflect the practice expectations described in standards of practice, and the professional attributes required in a given nursing role, situation, or practice setting. Professional attributes include, but are not limited to, knowledge, skill, judgment, values, and beliefs. (College of Nurses of Ontario, 2003)

Critical Care Nurse:

Critical care nurses are highly knowledgeable and skilled health care professionals that work in a critical care unit in collaboration with members of the health care team to provide optimum holistic care. The skills and knowledge of critical care nurses may be directed towards health promotion, prevention, crisis intervention, maintenance, rehabilitation/restoration or palliation in care of critically ill patients. Critical care nurses maintain professional competence through ongoing education, research and skill development and strive to provide evidenced-based practice through promotion of research within their specialty areas (Canadian Association of Critical Care Nurses, 2004). Nurses are prepared through an undergraduate program. Critical care specialist training is usually provided in the critical care unit.

Critical Care Unit:

The critical care unit is an area that provides highly technological care to critically ill patients and their families and/or support systems. The unit is designed in a way to provide care that is highly visible and accessible to the patient, while still promoting comfort with a patient and family focused philosophy. (Canadian Association of Critical Care Nurses, 2004)

Didactic Training:

Didactic training refers to the theoretical component of training. An instructor, who is an experienced and knowledgeable educator, lectures students in a classroom setting using tools such as overheads, power point slides, or other multi-media technologies.

Distance Education:

Distance education is a mode of delivery for students who do not attend on-campus courses. Courses are delivered by correspondence, telecommunications, internet and web-based media, or combinations of media, and may include short periods of on-campus attendance. Work is completed within set time frames, and there is minimal to no interaction between the learner and their teacher or peers.

E-Learning:

E-learning covers a wide set of applications and processes such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via internet, intranet/extranet, audio and videotape, satellite, and CD-ROM. Learners are able to learn any time and any place. Typically it involves some form of interactivity, which may include online interaction between the learner and their teacher or peers. (www.neiu.edu/~dbehrlic/hrd408/glossary.htm)

Hospital-Based Critical Care Nurse Training Program:

This is a program to train nurses to work in the critical care setting, which is designed and taught by the hospital where they will be working. The program is completely hospital specific. Therefore, the length of training, both didactic (theory) and clinical, depends on the training needs and resources of the hospital. It may be individualized or tapered to the education needs of the nurse.

Mentorship:

Mentorship occurs after training and orientation and is intended to support new critical care nurses for several months while expertise develops. The objectives of critical care mentorship programs include: 1) providing advanced level education to critical care nurses; 2) fostering pathways to clinical excellence; and 3) educating critical care nurses on evidence-based medicine best practices.

Objective Structured Clinical Examination (OSCE):

An Objective Structured Clinical Examination (OSCE) uses a series of test-stations to test clinical competencies. In an OSCE, performance at each task is assessed according to a pre-determined checklist, enabling *objective* marking. The examination is *structured*, so that each student can be expected to face identical or closely equivalent tasks. The content is related to the *clinical* skills that the student is expected to have at that stage of training. OSCEs were initially designed as summative *examinations*, and can identify both pass-fail and honors candidates. (Benbow et al, 1998)

Orientation:

Activities and programs designed to help new nurses become acquainted with their working environment. Orientation programs are unit specific.

Preceptorship:

This is a period of practical experience and training for nurses, which is supervised by an expert or specialist in a particular field. Many critical care training programs implement preceptorships as part or all of their clinical training (usually after didactic training). Perceptorships allow nurses to participate in hands-on critical care training to gain important knowledge and skills through experiences, while still under the safety of supervised care. Preceptors (the expert or specialist) provide guidance, supervision and act as role models for nurses in training. They are also responsible for identifying the learning needs of nurses and ensuring that these are observed.

Standards of Practice:

Critical care nursing standards are statements that describe the level of performance expected of registered nurses in critical care practice (Canadian Association of Critical Care Nurses, 2004). The three major components are professional standards, practice expectations, and legislation. “All standards of practice provide a guide to the knowledge, skills, judgment and attitudes that are needed to practice safely” (College of Nurses of Ontario, 2002).

Methods

In order to prepare standards and core competencies in critical care nursing, the Task Group completed the following:

- A snapshot survey of the use of competency based standards in adult critical care units in Ontario
- An inventory of the critical care nurse training programs and critical care nursing standards employed across Ontario (including delineation of expectations considering the levels of critical care as described in the report)
- A review of the scientific literature regarding:
    - Standards of care (including the standards provided by the Canadian Association of Critical Care Nurses);
    - The evidence base for teaching/learning methods most effective for nurses;
    - Outcome evaluation related to standards development and implementation.
- A review of how comparable jurisdictions have addressed standards for nurse training in critical care
- Analysis of cost of current and proposed critical care nurse training models

3.1 Surveys

The Task Group conducted two comprehensive surveys. The first survey was a questionnaire that collected information on the critical care nurse training programs, standards and core competency documents in current clinical use across the province (Appendix B). The questionnaire was distributed to Chief Nursing Officers of 84 Ontario hospitals known to have critical care units (excluding emergency departments and step-down units) and was completed by lead critical care nurses. A total of 53 hospitals with 68 critical care units responded to the survey (response rate=63%).

The second survey was an audit of college-based critical care nurse training programs (Appendix C). College programs were identified through Internet searches. However, Task Group members, the Nursing Secretariat, and representatives from the colleges were also consulted to ensure the list was complete and accurate. Fifteen critical care college-based programs were identified. Information about these programs was obtained from web pages and through phone conversations with program directors.

Members of the Task Group were also questioned about their in-house critical care nurse training programs, including preceptorship programs. This survey was not meant to be exhaustive, but provides some indication of the variability of in-house critical care training programs in Ontario.

3.2 Literature Reviews

3.2.1 Published Reviews

Articles were identified through database searches or were recommended by Task Group members. Database searches were conducted in Medline and CINAHL (Cumulative Index to Nursing and Allied Health) using the following key words and phrases: critical care or intensive care nursing education, implementation and evaluation of critical care nursing education, e-learning and critical care nursing education, continuing education, critical care nursing certification, and critical care nursing standards and competencies.

There was a significant amount of literature on the implementation of critical care nursing education programs. Most articles compared similarities and differences in program content across hospitals and linked critical care nursing program content to the proficiency of nurses in critical care areas. Some articles also provided guidelines for critical care nurses in the implementation of critical care services.

There was a moderate amount of literature on critical care nursing standards; however, only a few articles discussed the implementation and evaluation of standards, and outcomes of implementation. Also, the literature provided few tools for evaluating the performance and skills of critical care nurses.

3.2.2 Grey Literature

Non-peer reviewed articles and standards documents were obtained from Internet searches and websites of professional nursing organizations. Leaders and representatives of these organizations (ie. AACN and WFCCN) were also contacted to obtain standards documents or position statements where necessary.

Task Group members provided the names of individuals in other jurisdictions (outside of Ontario) to speak to or to obtain information from about critical care nurse training programs, standards, and competencies. They also shared their hospitals' critical care nursing standards of practice, education materials, and orientation packages.

In-person and telephone interviews were conducted with nurses participating in critical care courses, such as the Acute Care Nurse Practitioner (ACNP) on-line program at the University of Toronto. These interviews were conducted to gain insight into the nurse's perception of on-line education.

3.1 Cost Analyses

No literature focused specifically on the cost of critical care nursing training programs. The cost of critical care nurse training was investigated using Task Group member hospitals as examples.

Critical Care Nursing Standards and Training in Ontario

4.1 Critical Care Nursing Core Competencies and Standards Questionnaire

4.1.1 General Findings

Table 1 presents a general overview of the findings from the questionnaire. Of the 68 critical care units that responded most were medical or surgical (79%) with 10 beds or less (56%). Almost 90% (61 of 68) of critical care units used in-house orientation programs to prepare new nurses for practice in critical care areas, while only 34% (23 or 68) used college-based training programs. There were written standards of practice in 85% (58 of 68) of the critical care units surveyed.

Table 1: General overview of results from the critical care nursing competencies and standards questionnaire.

Variable		N (%)
ICU Type	Medical	2 (2.94)
	Surgical	2 (2.94)
	Medical/Surgical	54 (79.41)
	Other	10 (14.71)
# Beds	≤10	38 (55.88)
	11-15	11(16.18)
	16-20	14 (20.59)
	>20	5 (7.35)
College Certification	Yes	23 (33.82)
	No	44 (64.71)
	Missing	1 (1.47)
In-House Orientation	Yes	61 (89.71)
	No	4 (5.88)
	Missing	3 (4.41)
Preceptorship	Yes	44 (64.71)
	No	16 (23.53)
	Missing	8 (11.76)
Written Standards	Yes	58 (85.29)
	No	10 (14.71)

4.1.2 Critical Care Nursing Training

Table 2 shows the number of weeks Ontario critical care units dedicate to didactic and clinical components of nurse training in different programs. There is significant variation in the duration of didactic and clinical components both within and across training programs. However, we were unable to ascertain the quality of these programs. We would expect shorter training programs, irrespective of type, to be less comprehensive. This survey does not verify nor negate this.

In critical care units that use college-based programs, most dedicate more than 9 weeks to didactic training (35%) and 3 to 5 weeks to clinical training (30%). However, the duration of didactic and clinical training ranges from 0 to 2 weeks to more than 9 weeks. 0 to 2 weeks are devoted to didactic training in 13% of units and clinical training in 22% of units. More than 9 weeks are devoted to didactic training in 35% of units and clinical

training in 4% of units. The variation observed in this survey likely reflects differences in the number of hours and percent of time devoted to didactic and clinical components in college programs.

Most units that use in-house orientation programs spend 0 to 2 weeks on didactic or clinical training (59% and 39%, respectively). However, there is some variability in the time devoted to didactic and clinical training in these programs. The duration of didactic training ranges from 0 to 2 weeks (59%) to 6 to 8 weeks (3%), while the duration of clinical training ranges from 0 to 2 weeks (39%) to more than 9 weeks (5%).

Preceptorship programs supplement college and in-house orientation programs. This survey also found variability in the time devoted to clinical training in preceptorship programs across critical care units. Most units (50%) allocate 3 to 5 weeks to clinical training, but this ranges from 0 to 2 weeks (23%) to more than 9 weeks (5%). All critical care units but one (75%) dedicate 0 to 2 weeks to didactic training.

Units that use college-based training programs dedicate more time to didactic training than in-house orientation programs or preceptorship programs. The amount of time allocated to clinical training is similar across these programs.

Table 2: Strategies for critical care nurse training and division of weeks devoted to didactic and clinical components.

	Didactic Component					**Clinical Component**				
	0-2 weeks	**3-5 weeks**	**6-8 weeks**	**9+ weeks**	**Missing**	**0-2 weeks**	**3-5 weeks**	**6-8 weeks**	**9+ weeks**	**Missing**
College-Based Program (n=23)	3 (13.04%)	4 (17.39%)	5 (21.74%)	8 (34.79%)	3 (13.04%)	5 (21.74%)	7 (30.43%)	5 (21.74%)	1 (4.35%)	5 (21.74%)
In-House Orientation Program (n=61)	36 (59.02%)	19 (31.15%)	2 (3.28%)	-	4 (6.55%)	24 (39.34%)	20 (32.79%)	9 (14.75%)	3 (4.92%)	5 (8.20%)
Preceptorship Program (n=44)	33 (75.00%)	1 (2.27%)	-	-	10 (22.73%)	10 (22.73%)	22 (50.00%)	6 (13.63%)	2 (4.55%)	4 (9.09%)

Table 3 shows the weeks devoted to didactic and clinical training in in-house orientation programs by ICU size (the number of beds). Most units with 10 or fewer beds or 11 to 15 beds spend 0 to 2 weeks on either didactic or clinical training (≤10 beds: *didactic*=60%, *clinical*=42%; 11-15 beds: *didactic*=60%, *clinical*=50%). Units with 16 to 20 beds generally allocate 0 to 2 weeks for didactic training (73%) and 3 to 5 weeks for clinical training (55%). Units with more than 20 beds usually spend 3 to 5 weeks (80%) on didactic training and 6 to 8 weeks (60%) on clinical training. These results suggest that larger units, particularly those with more than 20 beds, spend more time on critical care nurse training (didactic+clinical) than smaller units.

Table 3: Number of beds by division of weeks devoted to didactic and clinical components in in-house orientation programs (n=61).

	Didactic Component					Clinical Component				
	0-2 weeks	**3-5 weeks**	**6-8 weeks**	**9+ weeks**	**Missing**	**0-2 weeks**	**3-5 weeks**	**6-8 weeks**	**9+ weeks**	**Missing**
<10 beds (n=35)	21 (60.00%)	8 (22.86%)	2 (5.71%)	-	4 (11.43%)	15 (42.86%)	9 (25.71%)	5 (14.29%)	2 (5.71%)	4 (11.43%)
11-15 beds (n=10)	6 (60.00%)	4 (40.00%)	-	-	-	5 (50.00%)	4 (40.00%)	1 (10.00%)	-	-
16-20 beds (n=11)	8 (72.73%)	3 (27.27%)	-	-	-	3 (27.27%)	6 (54.55%)	-	1 (9.09%)	1 (9.09%)
>20 beds (n=5)	1 (20.00%)	4 (80.00%)	-	-	-	1 (20.00%)	1 (20.00%)	3 (60.00%)	-	-

Table 4 shows the weeks devoted to didactic and clinical training in preceptorship programs by ICU size (the number of beds). These results indicate that critical care units generally dedicate 0 to 2 weeks to didactic training and 3 to 5 weeks to clinical training in preceptorship programs, irrespective of ICU size.

Table 4: Number of beds by division of weeks devoted to didactic and clinical components in preceptorship programs (n=44).

	Didactic Component					Clinical Component				
	0-2 weeks	**3-5 weeks**	**6-8 weeks**	**9+ weeks**	**Missing**	**0-2 weeks**	**3-5 weeks**	**6-8 weeks**	**9+ weeks**	**Missing**
<10 beds (n=22)	18 (81.82%)	-	-	-	4 (18.18%)	8 (36.36%)	9 (40.91%)	2 (9.09%)	1 (4.55%)	2 (9.09%)
11-15 beds (n=8)	5 (62.50%)	1 (12.50%)	-	-	2 (25.00%)	1 (12.50%)	4 (50.00%)	2 (25.00%)	-	1 (12.50%)
16-20 beds (n=12)	9 (75.00%)	-	-	-	3 (25.00%)	1 (8.33%)	7 (58.33%)	2 (16.68%)	1 (8.33%)	1 (8.33%)
>20 beds (n=2)	1 (50.00%)	-	-	-	1 (50.00%)	-	2 (100.00%)	-	-	-

4.1.3 Written Critical Care Nursing Standards Documents

Of the 68 critical care units surveyed, 58 units have written standards of practice for critical care nursing. Detail about these standards documents is provided in Table 5.

Table 5: Written critical care nursing standards documents (n=58).

Variable		N (%)
CNO Standards Reflected	Yes	50 (86.21)
	No	7 (12.07)
	Missing	1 (1.72)
CACCN Standards Reflected	Yes	54 (93.10)
	No	4 (6.90)
	Missing	-
AACN Standards Reflected	Yes	20 (34.48)
	No	37 (63.79)
	Missing	1 (1.73)
Frequency of Updating Standards	1-2 years	18 (31.03)
	3-5 years	14 (24.14)
	>5 years	1 (1.72)
	Missing	25 (43.11)
Standards Inclusive of Competency Statements	Yes	41 (70.69)
	No	16 (27.59)
	Missing	1 (1.72)
Standards Inclusive of Evaluation Component	Yes	41 (70.69)
	No	16 (27.59)
	Missing	1 (1.72)

More than 85% of written standards of practice reflect standards established by the Canadian Association of Critical Care Nurses (CACCN) and the College of Nurses of Ontario (CNO). Only 35% reflect the standards of the American Association of Critical Care Nurses (AACN). The frequency of updating standards varies from one to five years, with most units updating standards annually or biannually (31%). Among the critical care nursing standards documents currently available in Ontario hospitals, 71% include competency statements and evaluation components.

Table 6 presents some details regarding the evaluation of critical care nursing standards and competencies in Ontario hospitals. In units that have written standards of practice with an evaluation component, evaluation of standards and competencies is generally conducted annually (54%). Ninety five percent of these units provide documentation of evaluation, and peer review is a required component of evaluation in 44% of units.

Table 6: The evaluation of standards and competencies in critical care nursing (n=41).

Variable		N (%)
Frequency of Evaluation	Annually	22 (53.66)
	Biannually	14 (34.15)
	>Biannually	1 (2.44)
	Missing	4 (9.75)
Documentation of Evaluation	Yes	39 (95.12)
	No	2 (4.88)
Peer Review a Required Component of Evaluation	Yes	18 (43.90)
	No	23 (56.10)

4.1.3 Summary of Findings

- In-house orientation is the most commonly used method to prepare nurses for practice in critical care areas.
- There is considerable variation in the number of weeks critical care units dedicate to didactic and clinical training both within and across critical care training programs.
- Most units have written standards of practice that reflect the standards of the CACCN and CNO.
- Among critical care units with standards inclusive of an evaluation component, most evaluate nurses every 1 to 2 years and provide documentation of evaluation.

4.2 Critical Care Nurse Training

4.2.1 College-Based Training Programs

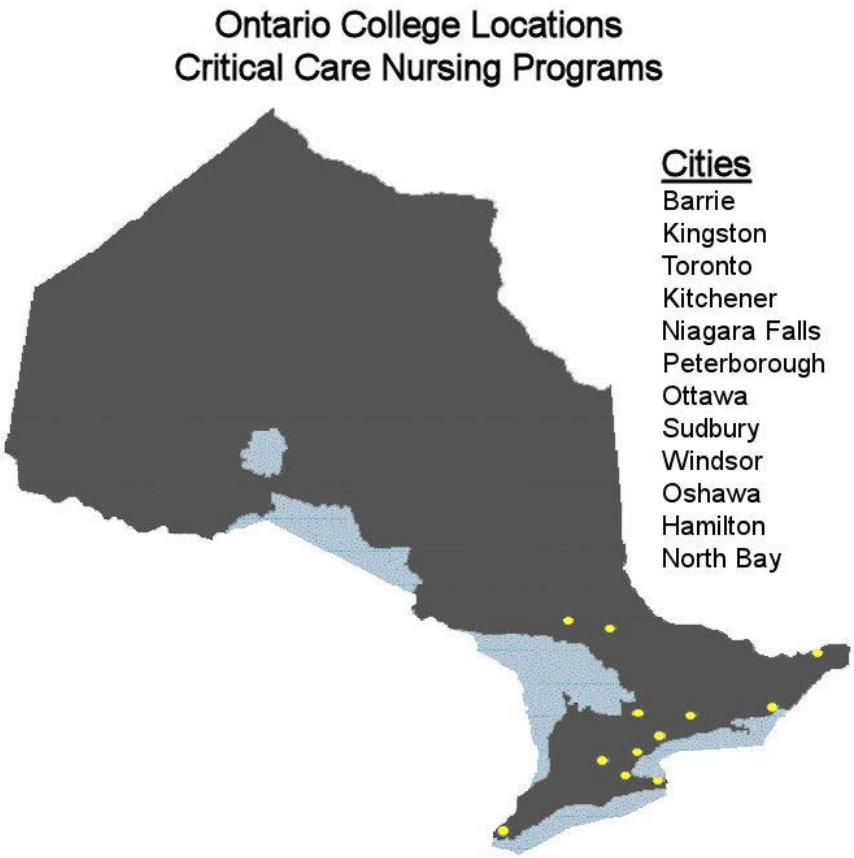
Distribution of College-Based Training Programs

There are 15 colleges that offer critical care nursing training programs in Ontario. These are:

- Algonquin (Ottawa)
- Cambrian (Sudbury) - program is currently suspended
- Canadore (North Bay)
- Centennial (Toronto)
- Conestoga (Kitchener)
- Durham (Oshawa)
- Georgian (Barrie)
- Humber (Toronto)
- Mohawk (Hamilton)
- Niagara (Niagara Falls)
- Fleming (Peterborough)
- George Brown (Toronto)
- Seneca (Toronto)
- St. Lawrence (Kingston)
- St. Clair (Windsor)

These colleges are somewhat geographically distributed, except in Northern Ontario. The majority of critical care nursing programs are located in South Central Ontario.

Figure 1: Distribution of college-based training programs in Ontario.



Course Information for College-Based Training Programs

All the colleges but one (14 out of 15, 93%) offer the critical care nursing program part-time (Table 7). Courses are run according to the number of students that apply and may be cancelled because of poor enrollment. At times, this makes course or program completion very difficult.

George Brown, Fleming, and Humber offer some or all of their courses full-time (Table 7). George Brown's full-time program takes four months to complete. Nurses who successfully complete the program receive a college certificate in critical care nursing. Fleming offers some courses full-time through a fast track option. The fast track option enables nurses to acquire the courses required for employment in about five weeks. However, this option does not entitle them to a certificate in critical care nursing. College certification is only awarded to nurses who complete the entire critical care nursing program.

Humber also offers a condensed full-time program of mandatory courses. This program is more extensive than Fleming's fast-track option and takes 11 weeks to complete. Nurses who successfully complete the program

receive a certificate of participation. Additional courses must be completed to receive a college certificate in critical care nursing.

A critical care nursing certificate is granted upon successful completion of most critical care nursing programs. The exceptions are Fleming's fast track option and Humber's condensed full-time program. However, the time it takes individual nurses to complete the program varies (Table 7). Completion time depends on when courses are run and whether nurses are able to attend these courses. In some cases, this takes up to 5 years. This is problematic because nurses enrolled in critical care nursing programs part-time for 3 or more years often never implement what they learn.

Course Content in College-Based Training Programs

Critical care nursing programs include both theoretical and clinical components. The number of hours and percent of time devoted to theoretical and clinical training varies across colleges (Table 7). The number of hours devoted to theoretical training ranges from 190 hours (St. Lawrence) to 302 hours (Algonquin); the percent of time ranges from 47% (Seneca) to 79% (Durham). The number of hours devoted to clinical training ranges from 60 hours (Durham) to 240 hours (George Brown); the percent of time devoted to clinical training ranges from 27% (St. Clair) to 55% (George Brown).

Most critical care nursing programs offer courses that are modular in design. Modules are created around body systems and the technological monitoring connected to these systems. Pathophysiological aspects are either incorporated into each module or taught as a separate topic. Although program content appears to be similar across the colleges, the variation in course titles and descriptions makes this difficult to ascertain.

Cost of College-Based Training Programs

The tuition of college-based critical care training may be covered by hospitals or individual nurses. The different courses offered across colleges are associated with specific prices, ranging from $69 at Conestoga to $530 at Cambrian. We estimate that the tuition of putting a single nurse through an entire college-based critical care training program is somewhere between $1,500 and $2,000. In addition to tuition, staff member education time contributes to costs. The total cost of training a single critical care nurse (tuition and education time) is estimated to range from $14,000 to $22,000 dependent upon duration of the program (clinical and didactic), tuition and salary scale of the nurse.

Table 7: College-based training programs in Ontario.

Colleges	FT	PT	Avg Time to Complete	# Enrolled	Total Hrs	# Theoretical Hrs	# Clinical Hrs	In-Class	Distance Training	Collaborates with Hospital	Cost per Course
Algonquin		X	3 years	40/class	372	302 (77%)	90 (23%)	X			$161.66 - $425.46
Cambrian*		X							X		$207.84 - $529.82
Canadore		X			450	300 (67%)	150 (33%)		X		
Centennial		X		20/class	396	196 (49%)	200 (51%)	X			$320 - $455
Conestoga		X		10/class	381	261 (69%)	120 (31%)	X	X		$69 - $197
Durham		X		20/class	290	230 (79%)	60 (21%)	X			$175.30 - $522.00
Fleming	X	X	8 months – 2 years	20/class	360	234 (65%)	126 (35%)	X			$90 - $304
George Brown	X		4 months	45/class	438	198 (45%)	240 (55%)	X		X	$1,495 total fees
Georgian		X	2 years	20/class	305	215 (70%)	90 (30%)	X			$170 - $350
Humber (PT)		X	3 years	25/class	384	192 (50%)	192 (50%)	X		X	$300 - $400
Humber (FT)	X		11 weeks		400	200 (50%)	200 (50%)	X			$300 - $400
Mohawk		X	2 years	20/class	297	213 (71%)	84 (28%)	X	X	X	$120 - $140
Niagara		X		12/class	375	285 (76%)	90 (24%)	X			$178 - $269
Seneca		X			380	180 (47%)	200 (53%)	X			$307 - $410
St. Clair		X			355	260 (73%)	95 (27%)	X			$1548.70 total fees
St. Lawrence		X		25/class	350	190 (54%)	160 (46%)	X			$5 / hour

4.2.2 Hospital-Based Training Programs

Sample of Task Group In-House Orientation Programs

Table 8 summarizes the responses of Task Group members to an informal questionnaire on in-house critical care orientation programs. In particular, this table describes the in-house orientation programs at Hamilton Health Sciences, Sudbury Regional Hospital, Northumberland Hills Hospital, Ottawa Hospital, Peterborough Regional Health Centre, St. Thomas Elgin-General Hospital, and Trillium Health Centre.

In six of the seven hospitals surveyed there are prerequisites for in-house critical care nursing orientation. These include: prior experience, critical care nursing certification, and specific courses. New nurses at Ottawa Hospital require one course from a college critical care program, while novice nurses require prior ICU experience. Nurses at Sudbury Regional Hospital require prior experience in an acute care or ICU setting. Northumberland Hills Hospital requires two years of acute nursing experience, enrollment in a college critical care program and current ACLS prior to orientation. Peterborough Regional Health Centre asks that nurses be enrolled in a college critical care program, and Trillium Health Centre asks that nurses complete one course from a critical care program.

The number of hours devoted to clinical and didactic training varies across in-house orientation programs. In this survey, the duration of clinical training ranged from 45 to75 hours at Trillium Health Centre to 262.5 hours at Ottawa Hospital. The duration of didactic training ranged from 22.5 hours at Northumberland Hills Hospital to 112.5 hours at Ottawa Hospital. Generally, the time devoted to training (clinical or didactic) depends on the experience of new nurses. There is flexibility for training time to be decreased or expanded based on the nurses' experience, comfort level, and self-assessment.

For the most part, in-house critical care nursing orientation programs are offered on an as need basis. They are offered 6 times a year at Hamilton Health Sciences Centre, monthly at Sudbury Regional and Ottawa Hospitals, annually at Peterborough Regional Health Centre, and up to 14 times a year at Trillium Health Centre. At St. Thomas Elgin Hospital the need for orientation programs appears to be inconsistent from year to year. In 2004, this hospital ran 2 programs, while in 2005 it ran 6 programs. Northumberland Hills Hospital was unable to provide an estimate.

Orientation program enrollment per session also varies across hospitals. In this sample, enrollment ranged from 1 nurse per session at Northumberland Hills Hospital to 25 nurses per session at Hamilton Health Sciences Centre.

The cost of in-house orientation programs depends on numerous factors such as the number of hours of training and the hourly wages of the new nurses, educators, and preceptors involved in training. In this sample, the direct cost per nurse (excluding the cost of educators and preceptors) ranges from $3,553 at Northumberland Hills Hospital to $15,750 at Ottawa Hospital.

Table 8: Sample of Task Group in-house orientation programs.

	Eligibility				Program Hours		Frequency of Program	Enrollment per Session	Cost
	No Prerequisites	Prior Experience	Critical Care Nursing Certification	Specific Courses	Clinical	Didactic			
Hamilton Health Sciences	May Hire	Prior ICU experience preferred but not necessary	Preferred but not necessary	None	6-8, 7.5 hour days (clinical time combined with in-class theory), followed by a 1 week – 3 month preceptorship		As required, on average 6 times per year	25 nurses (across 3 sites)	$10,000 per RN
Sudbury Regional Hospital	-	Yes	No	None	8-12 hour buddied shifts (90 hours in total)	37.5 – 45 hours	Monthly	3-4 nurses	$4050 per RN ($1350 didactic, $2700 clinical) + indirect costs of respiratory therapist, nurse clinicians, and mentors
Northumberland Hills Hospital	-	2 years acute nursing experience	Yes – must be enrolled in college critical care program prior to orientation	Current ACLS	90 hours (additional in-services 1:1 with RT, anesthetist, and pharmacist)	22.5 hours + computer clinical tutorials	As required	1-2 nurses	$3552.75 per RN ($31.58/hour, 15 shifts) + benefits + indirect costs of clinical educator
Ottawa Hospital	-	Prior experience preferred but not necessary if RN has successfully completed critical care course and BKAT (Basic Knowledge Assessment Tool)	Not necessary	At least one critical care course from a college critical care program	75-262.5 hours (~7 weeks)	112.5 hours (~3 weeks)	Monthly	1-6 nurses	$15,750 per RN ($35/hour, 10 wks, 1.2 relief) + $18,900 per educator ($42/hour, 10 wks, 1.2 relief)
Peterborough Regional Health Centre	-	-	Yes – nurses must complete a college critical care program within a mutually agreed upon time	Coronary Care 1, Pulmonary & Physical Assess-ments	6-8, 12 hour days	5, 7.5 hour days	As required, usually annually	5-8 nurses	~$8,000 per RN ($55,000 salary, 24% benefits) + $8000 teaching fee (paid to Fleming)
St. Thomas Elgin-General Hospital	NA	NA	NA	NA	250 hours for new RNs (or 6, 12 hour days for novice nurses)	Max 80 hours for new RNs	As required	1-6 nurses	NA
Trillium Health Centre	-	2 years nursing experience preferred but not necessary	Preferred but not necessary	At least one course from a college critical care program	45-75 hours	75 hours	As required, up to 14 times per year	Max 10-15 nurses	~$5,400 per RN ($36/hour, 120-150 hours) + indirect costs of clinical educator

Task Group members raised issues regarding in-house orientation programs such as a lack of support for the follow-up of new critical care nurses and small orientation class sizes. In smaller centres, common obstacles include: lack of time for educators to update and prepare learning packages with current data and delivery methods, availability of appropriately knowledgeable clinical educators, lack of support and structure for ongoing learning for educators to keep pace with trends and standards, and little variation in patients in the critical care unit to provide a full range of learning opportunities for new nurses.

Sample of Task Group Preceptorship Programs

Table 9 summarizes the responses of Task Group members to an informal questionnaire on critical care nursing preceptorship programs. In particular, this table provides an in-depth look at the preceptorship programs of the Ottawa Hospital, Sudbury Regional Hospital, Peterborough Regional Health Centre, St. Thomas Elgin-General Hospital, and Trillium Health Centre.

Critical care nursing preceptorship programs complement the training of new nurses in orientation and college-based programs. Preceptors are nurse volunteers with experience in ICU settings that are leaders, good communicators, knowledgeable, and resourceful. The amount of ICU experience required of preceptors varies slightly across hospitals. To be a preceptor at Ottawa Hospital, nurses need to have been in the unit for 1 to 2 years. To be a preceptor at St.Thomas Elgin Hospital, nurses need to have a minimum of 2 years experience working in an ICU setting.

Critical care nurse preceptors are required to attend a one to two full-day training workshop. Topic areas covered at these workshops include: basic communication skills, adult learning principles, conflict management strategies, and giving and receiving feedback.

The hospitals surveyed indicate that similar processes are used to match preceptors to preceptees in critical care units across Ontario. Typically, nurse leaders match the personalities of both parties. St. Thomas Elgin-Hospital also considers work history. At the Ottawa Hospital and Peterborough Regional Health Centre new orientees have an opportunity to meet preceptors during orientation and so have a voice in choosing their preceptors.

Critical care nursing preceptorship programs are offered annually at Ottawa Hospital, Sudbury Regional Hospital, and St. Thomas Elgin General Hospital, twice yearly at Peterborough Regional Health Centre, and 4 times a year at Trillium Health Centre. Preceptorship program enrollment also varies across hospitals. In this sample, enrollment ranged from 12 nurses at Peterborough Regional Health Centre to 35 nurses at Trillium Health Centre.

Only three of the four hospitals surveyed indicated a length for their preceptorship program. Preceptorship is 3 months at Ottawa Hospital, 90 hours at Sudbury Regional Hospital, and only 4 weeks at Trillium Health Centre. Based on these results, it is reasonable to assume that the overall length of preceptorship programs varies across hospitals and may depend on the previous training of nurses (ie. college-based program at Trillium Health Centre vs. in-house orientation program at Ottawa Hospital).

Some of the issues raised by Task Group members regarding preceptorship programs include: a lack of time to develop tools for preceptors, a lack of time to participate in the preceptorship program due to unit needs, a lack of consistent competency tools and learning plans across organizations, and a potential for burnout for dedicated preceptors who are frequently assigned to the role.

Table 9: Sample of Task Group preceptorship programs.

	Eligibility for Preceptors	Matching Preceptors and Preceptees	Preceptor Training	Length of Preceptorship Training	Frequency	Enrollment
Ottawa Hospital	Interested RNs who have been in the unit for 1-2 years	Match personalities (new orientees meet preceptors during orientation and have a voice about choosing their preceptors)	Hospital preceptor day, workshops (basic communication skills, adult learning principles, giving and receiving feedback, use of role playing, etc.)	3 months	Annually	Depends on the year
Sudbury Regional Hospital*	Experienced RNs with a desire to foster the development of peers using the principles of adult education	Match the needs of the learner to the leadership qualities and attributes of the staff member serving as a preceptor	7.5 hour program that is didactic in nature (skill review to provide a measure of consistency in skill performance for new learners)	8-12 hour buddied shifts (90 hours in total)	Annually	20-25
Peterborough Regional Health Centre	RN volunteers who are leaders, good communicators, knowledgeable, and resourceful	Match personalities (from meet and greet prior to initiation to the unit)	2, 7.5 hour days (how to manage relationships, adult learning skills, personality profiles, how to manage difficult situations)	NA	At least twice yearly	14-24 nurses (generally the program is fully subscribed at 24)
St. Thomas Elgin-General Hospital	All RNs are eligible for the hospital wide perceptorship program (to be a preceptor, must have a minimum of 2 years experience working in an ICU setting)	Match personalities + look at previous work history of both parties	1, 8 hour day (adult learning principles, conflict management strategies, individual perceptions of precepting, communication tools, development and utilization of learning plans, and performance objectives)	NA	Annually	12-15
Trillium Health Centre	RNs and RPNs selected by managers and educators	NA	1, 7.5 hour day (critical thinking, adult learning principles, learning styles, teaching techniques, coaching and peer feedback including role playing, etc)	4 weeks	4 times per year (basic preceptor program)	35

*Mentorship programs have replaced preceptorship programs at Sudbury Regional Hospital.

4.3 Summary of Critical Care Nursing Standards and Training Programs in Ontario

4.3.1 Strengths

- Most critical care units have written standards of practice.

- Most critical care units update their standards annually or biannually.
- Most critical care units with standards documents include competency statements and evaluation components.
- A certificate in critical care nursing is only granted to individuals who complete an entire college-based critical care nursing program.
- The content of critical care nursing programs appears to be similar across community colleges in Ontario.
- The number of weeks devoted to didactic and clinical training in preceptorship programs does not depend on ICU size.
- Preceptors are carefully selected, trained, and appropriately matched to preceptees in Task Group member organizations.

4.3.2 Opportunities for Improvement

- There is significant variation in the duration of training (didactic and clinical) both within and across critical care nurse training programs.
- Critical care nursing college courses are not consistently available, which can make course completion very difficult or take a long time. Curriculum is not standardized so raises need for consistency across the province as well.
- In some colleges, there is a problem of supplying clinical preceptors and instructors.[1]
- There is a lack of college-based training programs in Northern Ontario.
- Prerequisites for in-house critical care nursing orientation are not consistent.
- The number of weeks devoted to didactic and clinical training in in-house orientation programs appears to depend on ICU size. Larger units spend more time on training.
- In-house orientation programs are sometimes offered to extremely small classes, which is not an efficient use of resources.
- Supporting and strengthening the development of additional critical care nurse educators.
- Training nurses to competently practice in critical care areas is costly for hospitals.

4.4 Recommendations

R1: The Critical Care Secretariat should audit in-house hospital-based training programs to explore: 1) the content of didactic and clinical training; 2) the quality of didactic and clinical training; and 3) the evaluation of learning.

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[1] This issue was raised during a meeting with the colleges in January 2006. It is particularly relevant to colleges in rural and remote areas.

R2: The Critical Care Secretariat should audit college-based training programs to explore: 1) the quality of didactic and clinical training; and 2) their congruence with standards in critical care nursing.

R3: The Critical Care Secretariat should increase accessibility to college-based critical care nurse training programs, particularly in rural and remote areas of Northern Ontario (i.e. e-learning or distance education).

R4: The Critical Care Secretariat should provide resources to reduce the financial burden of hospitals that put nurses through in-house training programs or college-based training programs that meet standards.

Literature Review of Critical Care Nursing Standards and Training

5.1 Nursing Standards and Competency Evaluation

5.1.1 Canadian Association of Critical Care Nurses

The CACCN is a non-profit, specialty organization dedicated to maintaining and enhancing the quality of care provided to critically ill clients and their families. CACCN serves its membership, the public and the critical care nursing community by meeting the professional and educational needs of critical care nurses.

In 2004, the CACCN released the Third Edition of its standards document. This document is available to the public for a nominal fee and includes four main sections: a philosophical statement of critical care nursing, outcome standards for critical care nursing, a summary of outcome standards, and a summary of criteria for outcome standards. The largest section is that regarding outcome standards for critical care nursing. This is further divided into two subsections, the *Critical Care Unit* and the *Critical Care Nursing Process*, each of which include six or seven outcome standards with a list of relevant criteria.

The standards provided in this document guide critical care nurses in delivering safe effective care, and provide information to encourage a supportive and safe-working environment. It is a reassurance to the public that optimal patient care is the standard set by the CACCN, and that this is attainable through effective utilization of these standards.

The CACCN critical care nursing standards are global and relevant for all varieties and levels of critical care settings. Further, the CACCN standard document is clearly written, endorsed by an association of expert critical care nursing professionals, and revised frequently. (Canadian Association for Critical Care Nurses, 2004)

5.1.2 College of Nurses of Ontario

Compendium of Standards of Practice for Nurses in Ontario

The College of Nurses of Ontario (CNO) is the governing body for all registered nurses and registered practical nurses in Ontario. The CNO regulates nurses to protect the public in their best interest. This is done through setting requirements to enter into the profession, establishing and enforcing standards of nursing practice and maintaining competence for nurses.

The CNO establishes practices, standards, and guidelines within the Compendium of Standards of Practice for Nurses in Ontario. Standards are established to guide registered nurses (RNs) and registered practical nurses (RPNs) in their care in all health care environments at all levels. The Compendium is organized in a series of booklets, neatly separated, and easily accessible in a binder format. Sections include: practice standards, practice guidelines, quality assurance, legislation and regulation, and complaints and discipline.

The practice standards section is comprised of 9 booklets: professional standards, therapeutic nurse-client relationship, documentation, ethics, infection prevention and control, medication, registered nurses in extended class, restraints, and resuscitation revised 1999. These provide a framework for practice of care and describe broadly expectations of care. The practice guidelines section consists of 17 booklets. These booklets, which include guidelines on complementary therapies, consent, influenza vaccinations, and transferring patients, are intended to assist nurses to practice according to the standards of care. Standards and guidelines are revised frequently and new information can easily be added to the binder.

The Compendium is effective in providing guidelines for nurses to practice competent and safe care and for educators and employers to understand nurses' expectations and capacity for their role. The Compendium also provides a quality assurance program to help nurses maintain and continually improve competence throughout their career. A governing council oversees the Compendium and ensures that standards are accurate, comprehensive, realistic and adequate to protect the public. (http://www.cno.org/pubs/compendium.html)

The Quality Assurance Program and Competency Review Tool

The CNO developed the Quality Assurance (QA) Program in response to the Regulated Health Professions Act (1991), which required health regulatory bodies in Ontario to implement programs to assess the ongoing competence of members (Regulated Health Professions Act, 1991). The QA Program has three components: reflective practice, practice setting consultation, and practice review. The practice review component is of particular interest for the evaluation of competencies. This component involves a three step process: a written assessment called the Practice Review Written Assessment, an interview called the Practice Review Behavior Based Interview (PRBBI), and a remediation to address any issues identified in the PRBBI. Each year, nurses are randomly selected to participate in practice review.

The CNO developed the Competency Review Tool to assist nurses in preparing for the practice review. The Competency Review Tool allows nurses to assess competencies essential for safe, effective, and ethical nursing practice. More specifically, it helps nurses reflect upon their day-to-day practice to determine whether they meet nursing competencies and identify their learning needs. The Tool is divided into 5 broad categories based on the CNO standards: professional behaviour/ethics, critical thinking, research and leadership, client and nurse safety, relationships/caring, and clinical skills. Each category contains several competency statements, beside which nurses indicate whether they are able to demonstrate the competency.

The CNO's Competency Review Tool allows nurses to acknowledge their competencies and take action on their learning needs. It is clear and concise, has an easy format to follow, and is valuable for nurses at all levels, from beginner to expert. Often health care providers also use the Competency Review Tool to evaluate nursing performance. (http://www.cno.org/docs/qa/44028_CRT.pdf)

5.1.3 Canadian Nurses Association

Critical Care Nursing Exam for the Certification Credential for Critical Care Nurses

This certification credential, CNCC(C), is part of a respected national certification program. Certification allows nurses to build upon the solid foundation of their Canadian RN registration. Further, it helps nurses stay current by testing their specialized knowledge and skills.

Certification is an important indicator to patients, employers, the public, and professional licensing bodies, that the certified nurse is qualified, competent and current in a nursing specialty. Certified nurses have met rigorous requirements to achieve this expert credential. By taking the exam to achieve the certification nurses demonstrate their commitment to a national standard of professional competence. (http://www.cna-nurses.ca)

5.1.4 American Association of Critical Care Nurses

The American Association of Critical Care Nurses (ACCN) was founded to provide acute and critical care nurses with educational resources to promote optimal care for critically ill patients. This document is framed from the Standards of Clinical Nursing Practice and includes: standards of care for acute and critical care nursing practice, standards of professional performance for acute and critical care nursing practice, implications for integration of standards of care, and clinical examples.

The ACCN uses two conceptual frameworks to provide direction for standards of care for acute and critical care nursing practice. The *Nursing Process* is used to conceptualize nursing practice because it articulates the steps nurses take to plan, implement and evaluate care. The *Synergy Model* is used as it best describes the variability of patient characteristics, which require nurses to demonstrate appropriate competencies to meet the needs of the patient for optimum outcomes (Appendix D).

There are 6 standards of care for acute and critical care nursing practice: assessment, diagnosis, outcome identification, planning, implementation, and evaluation. There are 8 standards of professional performance for acute and critical care nursing practice: quality of care, individual practice evaluation, education, collegiality, ethics, collaboration, research, and resource utilization. Standards are all attached to statements describing how the nurse clinically performs the standard and descriptive measurement criteria. They are updated and revised frequently. (America Association of Critical-Care Nurses, 2000)

5.1.5 Suitability of Standards Documents for Ontario

Table 10 summarizes the attributes of the standards documents described in sections 5.1.1 – 5.1.4. The AACN's standards have several deficiencies. In order to understand the AACN's standards, nurses need to understand the conceptual frameworks of the nursing process and synergy models. Further, this document is least reflected in standards across Ontario, and does not provide direction on the evaluation and ongoing maintenance of competencies.

The CACCN and CNO standards encourage a safe and supportive working environment. They are clear, revised frequently, and endorsed by critical care units and nurses across Ontario. However, CACCN's standards do not

provide direction on the evaluation and ongoing maintenance of competencies, and CNO's standards and Competency Review Tool guide all registered nurses and registered practical nurses in Ontario, not only critical care nurses.

Ontario should establish a set of province-wide competency-based standards building on the standards of the CACCN and CNO, as these represent competent, safe and ethical patient care. They are also extensively reflected in critical care nursing standards documents across the province.

Table 10: Comparison of standards documents.

	CACCN Standards	CNO – Standards and Competency Review Tool	AACN Standards
Clear	X	X	
Revised frequently	X	X	X
Relevant to critical care nurses in a variety of clinical areas and levels	X		X
Reflected in critical care nursing standards documents across Ontario	X	X	
Encourages a safe and supportive working environment	X	X	X
Describes how nurses can evaluate their competence in meeting standards		X	
Describes how nurses can maintain competencies of standards		X	

5.1.5 Recommendations

R5a: The Critical Care Secretariat should establish a set of province-wide competency-based standards building on the standards of professional nursing organizations, especially the CACCN and CNO, as these represent competent, safe and ethical patient care. Standards should be comprehensive, realistic, and easily transferable. They should be used as framework for both critical care curriculum and assessment of clinical practice. They should also be adapted to incorporate the philosophy, beliefs, and values of individual hospitals.

R5b: Hospitals should develop a process for the implementation and evaluation of standards. This should include tools for the evaluation of competencies both after orientation and while working in critical care areas.

5.2 Reports and Position Statements for Critical Care Nursing Standards and Education

5.2.1 Department of Health, United Kingdom

The Nursing Contribution to the Provision of Comprehensive Critical Care for Adults (NCCCA) (2001)

This report sets out a program of action to help secure the nursing contribution to the national critical care program in the United Kingdom (UK) called Comprehensive Critical Care. It identifies five priority areas where continuing or further work is needed to maximize the nursing contribution. These are:

- Service delivery and organization of care
- Clinical effectiveness and research and development
- Education, training, and work force development
- Career pathways, recruitment and retention
- Leadership development at all levels

Each section is developed as a statement of priority with action points. Table 11 highlights action points that pertain to critical care nursing education, standards, competency evaluation, and development. (Department of Health UK, 2000)

Table 11: Action points from the United Kingdom related to critical care nursing education, standards, competency evaluation, and development.

Service Delivery and Organization of Care	• Promote access to work-based education and training to ensure that ward and department nurses are competent in assessing and managing acutely ill patients at risk of deterioration
Clinical Effectiveness, Research and Development	• Provide national standards and guidance in areas of practice that contribute positively to the patient's experience (ie. early warning systems and outreach services, management of weaning from artificial ventilation, and psycho-social care of patients with critical illness and beyond) • Facilitate benchmarking of clinical guidelines and standards and sharing of best practices • Develop research and development capacity within critical care nursing through education and training, and supporting nurses who want to develop a career pathway in research
Education, Training, and Workforce Development	• Review current critical care nursing education programs to ensure nurses are exposed to adequate theory and clinical practice to enable them to become competent as newly qualified critical care nurses in the assessment of acutely ill patients • Promote access to competency-based education and training within the workplace (these competencies should link directly with the level of care, 0-3, provided within each clinical setting) • Develop a learning culture where life-long learning becomes the norm and both individuals and teams constantly strive for clinical effectiveness • Base the level of staffing and skill mix required to care for critically ill patients on patient need and level of dependency rather than on the number of beds within a unit
Career Pathways, Recruitment, and Retention	• Provide opportunities for development to enhance retention (including education and training)
Leadership Development at All Levels	• Enable a culture of learning and effectiveness through individual performance review and personal development planning

5.2.2 Australia College of Critical Care Nurses

The Australian College of Critical Care Nurses represents over 2,500 critical care nurses nationally. Its members work across the critical care clinical spectrum and its activities focus on the care of both adult and pediatric critically ill patients.

Position Statement on Intensive Care Nursing Staffing (2003)

This position statement from the Australian College of Critical Care Nurses (ACCCN) outlines the appropriate nursing staffing standards in Australia for ICUs, taking into account the accepted minimum national standards, best practice evidence, and a rational economic health and government environment. ACCCN recommends 10 key points and principles to meet the expected standards of critical care nursing in Australia.

In order to achieve optimal critical care preparation and standards, the ACCCN recommends:

- Both suitable clinical experience and post-graduate specialist qualification.
- At least one nursing manager and one clinical nurse educator (one per 50 nurses) in each unit (large higher level units).
- Financial assistance and study leaves for nurses who do not have post-graduate qualifications to complete a recognized critical care course. Units need a minimum of 50% qualified critical care nurses; the optimum qualified critical care nurse ratio should be 75%.
- The allocation of resources to support time and cost for involvement of nurses in quality assurance activities, conference attendance, and nursing and multidisciplinary activities. (http://www.acccn.com.au/)

Position Statement on Postgraduate Critical Care Nursing Education (1999)

The ACCCN believes that appropriate preparation of specialist critical care nurses is a vital component for the provision of quality care to patients and their families. This position statement provides the ACCCN's recommendations on postgraduate critical care nursing education. These recommendations are based on evidence from research in critical care nursing and allied fields where possible or on the opinion of expert critical care nurses where current research-based evidence is not available.

The ACCCN believes that:

- There is pressing need for the establishment of consensus among education providers, health care providers and critical care clinicians on the desirable outcomes of critical care courses.
- Graduates of postgraduate courses in critical care must be able to demonstrate clinical competence as well as sound theoretical knowledge base. A strong emphasis on the application of theory to practice, and the assessment of clinical competence should be an integral component of postgraduate critical care courses.

- Critical care education providers need to refine their current policies for recognition of prior learning and alternative pathways into formal postgraduate specialist courses to create a more systematic and standardized approach.
- Health care providers and Health Departments should explore suitable strategies that will provide financial or career incentives that will encourage critical care nurses to complete postgraduate critical care courses.
- Education providers need to continue to implement educational strategies to facilitate access to postgraduate courses for critical care nurses from a range of geographical locations.
- Innovative strategies need to be implemented to address the deficit of qualified critical care nurses, rather than resorting to short training courses to resolve the problem. (http://www.acccn.com.au/)

5.2.3 World Federation of Critical Care Nurses

The World Federation of Critical Care Nurses (WFCCN) provides a network and global forum to link critical care nurses as individual practitioners and through their local and national professional associations. There are over 20 critical care nursing associations that belong to the WFCCN.

Declaration of Buenos Aires Position Statement (2005)

In May 2003 the World Federation of Critical Care Nurses undertook a review of available national critical care nursing associations' position statements on critical care nursing workforce requirements. The Declaration of Buenos Aires Position Statement (ratified in August 2005) was a product of this review, and offers guidelines to inform and assist critical care nursing associations, health services, governments and other interested stakeholders in the development and provision of appropriate critical care nursing workforce requirements. These guidelines may be adapted to meet the system and critical care nursing workforce requirements of particular countries and jurisdictions.

In the Buenos Aires Position Statement, the WFCCN indicates that critical care nurses should focus their labor on roles and tasks that require advanced expertise, skill and knowledge of best practice. Congruence should exist, between the needs of the patient and the knowledge, skills, and attributes of the nurse. Resources should be allocated to support nursing time and costs associated research activities, education, and attendance at seminars and conferences. Further, adequate nursing staff positions should be in place to assist with nursing education, in-services training, and quality assurance. (http://www.wfccn.org/webdocs/)

Position Statement on the Provision of Critical Care Nursing Education (2005)

In May 2003 the WFCCN undertook a review of the Declaration of Madrid, recommendations from the Australian College of Critical Care Nurses position statement on critical care nursing education, and other similar documents from member organizations. The Position Statement on the Provision of Critical Care Nursing Education (ratified in August 2005) was a product of this review, and presents guidelines to inform and assist critical care nursing

associations, health services, governments, and other interested stakeholders in the development and provision of critical care nursing education.

Central principles of the position statement include:

- Critical care nurses should posses appropriate knowledge, skills, and attitudes to effectively respond to the needs of critically ill patients and the challenges of advancing technology.
- Nurses with specialized knowledge and expertise should play an integral part in the education of critical care nurses.
- Critical care nursing courses should provide an appropriate mix of theoretical and clinical experience. They should have a mix of clinically oriented content and broader generic content to enable the nurse to develop professionally in areas such as leadership, research and practice development.
- National critical care nursing associations should establish agreed standards of critical care nursing and this should be used as a framework for both critical care curriculum development and assessment of clinical practice. Standards should be developed through collaborative efforts of health care providers and higher education providers to ensure they meet expectations of both sectors.
- Policies and processes should be in place to recognize prior learning and alternative pathways to education.
- Strategies are required to reduce the financial burden of nurses undertaking critical care nursing education.
- Education must be geographically feasible for nurses seeking critical care knowledge.
- Innovative strategies need to be implemented to address deficits in qualified critical care nurses, rather than shortening training courses to resolve the problem.
- Credit transfers (recognition of prior learning) should be offered to those nurses who have completed critical care education and wish to complete higher educational courses. (http://www.wfccn.org/webdocs/)

5.2.4 Common Themes in Position Statements and Reports from Other Jurisdictions

There were similar views among the jurisdictions researched in regards to recommendations about critical care nursing. These include the following:

- Standards should be implemented and used as a framework for critical care nursing curriculum development and assessment of clinical practice.
- Critical care nurse training programs should be geographically accessible and provide an appropriate mix of theoretical and clinical experience.
- Strategies are required to reduce the financial burden of nurses undertaking critical care nursing education.
- Prior knowledge should be evaluated when establishing the future learning needs of new nurses.

- Nurses should receive credits towards higher education (as a career incentive) upon completion of critical care nurse training programs.
- Nurses should be supported in their professional development and encouraged to establish career pathways, participate in current research, and develop philosophies of life-long learning.

5.2.5 Recommendations

R6: Province-wide competency-based standards should support and motivate nurses to further develop their careers in research, planning, and leadership.

R7: The Ministry should allocate resources to support nurses and their employers when they participate in quality assurance programs, research initiatives, conferences, and nursing and multidisciplinary activities.

R8: The Critical Care Secretariat should create different pathways for nurses to enter training programs; such as credit (exemption) for certain courses to ensure all nurses are appropriately challenged. This will require a process of evaluation of nurses' prior learning (ie. OSCE - Objective Structured Clinical Examination).

R9: The Ministry should provide credit transfers (recognition or prior learning) towards higher educational pursuits (ie. credits towards bachelor degrees) in college-based critical care programs.

5.3 Education Methods

5.3.1 In-House Orientation Programs

In-house orientation programs are education programs implemented by individual hospitals to prepare nurses with the skills they need to practice competently and safely in critical care settings. They are usually designed by nursing educators or administrators and consist of two components, didactic and clinical. The clinical component typically involves a preceptorship, during which time new nurses are paired up with experienced nurses to orientate them to the nursing area. The length of training (didactic and clinical) depends on the experience of new nurses.

Example – The Ottawa Hospital In-House Program (Ontario, Canada)

The Ottawa Hospital has developed a corporate orientation program for the critical care units of both Civic and General campuses. This is run monthly, with the exception of July and August. The length of orientation is based on the experience of the nurse. Most nurses require 412 hours of orientation. Eligibility for this program includes: an interview with the clinical manager and nurse educator, one course from a formal education facility (Accredited Critical Care Program), and the successful completion of a basic knowledge assessment tool.

The orientation includes 1 week of hospital/general orientation, 4 weeks of didactic training and 6 weeks of clinical training. The topic areas of the didactic training are: body systems, pathophysiology of patients within

critical care areas, technical skills, and theory in mechanical ventilation, hemodynamic monitoring, and ACLS. During the 4 weeks of didactic training, students are also are partnered up with experienced critical care nurses to gain experience on the floor. Clinical training is comprised of six weeks on the unit with a preceptor following a step system (Level 1 to Level 5) in which nurses build upon their knowledge and skills. Advanced skills, such as CRRT, and advanced hemodynamic monitoring, are taught as nurses acquire more experience on the unit.

5.3.2 Consortium Approach

In the consortium approach, a group of hospitals within an area collaborate to develop a general critical care nursing orientation of didactic and clinical components based on the overall needs of the hospitals involved. Education programs developed through consortiums may or may not be affiliated with academic institutions.

Example – Critical Care Education Consortium Approach in Tennessee, USA (Rice, 2001)

In 1971, a group of Middle Tennessee hospitals formed a council to develop a critical care nursing orientation program. Critical care staff and nursing leaders developed the original 140-hour (4 weeks) orientation. Some of the topic areas covered during orientation were: major body systems, pathophysiology, medical/surgical management, and nursing care.

Today, this program is taught as a continuing education program at Middle Tennessee State University (the hospital group is now called Middle Tennessee Healthcare Network). Full-time, part-time, and guest faculty and critical care consultants provide instruction in classroom sites that rotate among the consortium hospitals. The program is still 140 hours in length and hospital administrators and nursing leaders continue to provide input into the program through a critical care advisory committee.

An evaluation component has been integrated into the consortium-training program and evaluations are used to modify the material taught as well as the schedule. Nurses also receive continuing education credits from the school, which may be put towards continuing their university education.

5.3.3 College-Based Programs

These are critical care nursing education programs designed and delivered by academic centres. Courses are offered part-time, full-time, or both. Didactic components are delivered in classroom settings, while clinical components are delivered in critical care units of hospitals. Nurses acquire a certificate in critical care upon successful completion of these programs, with the exception of condensed or fast-track options.

Example - Critical Care Nursing Certificate Program Algonquin College (Ontario, Canada)

This part-time program prepares graduates to work in critical care areas in small and large hospitals. It is comprised of 10 didactic and 3 clinical courses, which vary in length and cost. The program length is approximately 372 hours. 203 hours are devoted to didactic learning (77%) and 90 hours (23%) are dedicated to clinical learning. Courses include: cellular homeostasis, psychosocial concepts in emergency and critical care, coronary care, and pulmonary care. Nurses receive a certificate in critical care upon completion of the program.

Generally, this program admits registered nurses with at least 2 years of clinical experience. Nurses with prior experience in areas of critical care can apply for a prior learning assessment, which can translate to college credits. Nurses with prior education at another institution can apply for a transfer of academic credit (exemption).

5.3.3 Hospital Based Programs in Academic Centres

This is a program to train nurses to work in the critical care setting, which is designed by hospital(s) and taught by an educational facility. Program design and course time (ie. length of didactic and clinical components) and content depends on hospital needs. Didactic training takes place in the educational facility. Clinical training takes place in the hospital setting.

Example 1 – Queen's University in Belfast, Northern Ireland (McGaughey, 2004)

This is a one-year competency-based program developed by Queen's University and key clinical stakeholders in local hospitals to ensure that a significant number of nurses are educated in intensive care. It is comprised of 2, 15 week semesters. Two didactic components are taught each semester and one clinical component is taught throughout the year.

The program includes competencies, learning strategies, and assessment processes, and uses evidenced-based portfolios to validate competencies. Portfolios are workbooks that detail structure, content, and assessment strategies of modules. They are assessed by clinical educators over the course of the year, and are used for student nurses to provide evidence of achievement. Learning outcomes are based on analysis of duties required in accordance with national or local standards. Learning contracts are created between students and clinical facilitators, to allow students to identify experiences in their own clinical areas in order to meet the learning outcomes of the program. The program also has an Objective Structured Clinical Examination (OSCE) to evaluate clinical competence and performance.

Example 2 – George Brown College in Toronto (Ontario, Canada)

George Brown's critical care nursing curriculum was developed in collaboration with local Toronto hospitals, and is based on CACCN and CNO standards. The program is 14 weeks in length and is divided into two sections, theory 1 with clinical and theory 2 with clinical. Courses integrate theory and practice, and skills and knowledge progress through the program.

The program is overseen by the Critical Care Nursing Advisory Committee, who monitors and evaluates the design of program, making revisions where needed. Students are mainly RNs hired by participating organizations to work in critical care settings. Nurses who successfully complete the program are awarded a certificate in critical care nursing with university transfer credits.

5.3.4 E-Learning Programs

E-learning covers a wide set of applications and processes such as web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via internet, intranet/extranet, audio and videotape, satellite, and CD-ROM. Learners are able to learn any time and any place. Typically it involves some form of interactivity, which may include online interaction between the learner and their teacher or peers. The Task Group was unable to identify e-learning programs for critical care nurse training in any jurisdictions. www.neiu.edu/~dbehrlic/hrd408/glossary.htm)

Example – Acute Care Nurse Practitioner On-Line Program, University of Toronto (Ontario, Canada)

This program is available both on-line and through traditional classroom format. Students enrolled in the on-line program use a website (called MN-ACNP) to access the course outline, expected learning outcomes, evaluation methods, important references and links, studies, and discussion groups. This website is the hub of communication with faculty and peers. Students are expected to actively participate in on-line discussion groups and are marked on participation, in addition to assignments. Orientation to the web site is available to students when they begin the program. Students do attend some sessions on campus to receive a program orientation, work in small groups, and participate in seminars.

University of Toronto's on-line acute care nurse practitioner's program is comprised of 9 courses. Approximately 15 hours a week is required to review learning material, to participate in discussion, and prepare assignments. If the program is taken part-time, it takes about 24-28 months to complete. Full time takes about 20-24 months to complete. Students can access the system 24/7, and are not required to "log-on" at any specific time. The clinical component of the program takes place during the second year of study; there is a requirement of two different clinical experiences.

Example – Essentials of Critical Care Orientation, ECCO (America Association of Critical Care Nurses, 2005)

ECCO is an internet-based program designed by AACN, to provide novice nurses with the theoretical orientation required to care for critically ill patients. The program is modular in design and is divided into 9 sections organized by body systems (ie. respiratory, cardiac, and neurological). Each module includes objectives, an outline, a glossary, lessons, worksheets, self-tests and a module test. Information is presented via slides and CD-Rom. These include graphics such as illustrations, tables and other teaching aids.

ECCO can be purchased by the hospital and has been utilized by many hospitals within the United States and other jurisdictions. The education package includes a resource manual for the instructor and the student as to how to log on and use the program. Successful implementation of ECCO requires significant synchronization between educators, students and preceptors.

5.3.5 Distance Education

Distance education is a mode of delivery for students who do not attend on-campus courses. Courses are delivered by correspondence, telecommunications, internet and web-based media, or combinations of media, and may include short periods of on-campus attendance. Work is completed within set time frames, and there is minimal to no interaction between the learner and their teacher or peers.

Example – Mohawk College, Hamilton (Ontario, Canada)

This program is conducted via paper. Learning packages and required material are mailed to nurses. Assignments and learning objectives are submitted to educators within specified time frames for evaluation. Exams are arranged in a structured testing facility. Course content is identical to classroom course content. Facilitators (contact persons) are available through phone and email to discuss questions and concerns.

5.3.6 Simulation Labs

Simulation is defined as a replication of the "real world" setting to model the environment, resources needed, and people involved. Simulation labs in the context of critical care nursing education are used to prepare nurses to care for critically ill patients before entering the actual clinical environment. They allow more time for hands on practical experience in conjunct with real clinical experience. Mannequins are one of the dominant technologies used in these labs. These are controlled by computers to mimic actual clinical manifestations and are attached to real critical care equipment such as ventilators, monitors, and IV. Computer software is also used to provide scenarios and guidance and prompts for students to carry out skills and utilize their knowledge base. To ensure the validity of clinical manifestations, intensive care clinical experts update computer software frequently.

Example - Glasgow Caledonian University, United Kingdom (Glen, 2005)

A simulation lab was recently incorporated into Glasgow Caledonian’s nursing program to enhance the clinical learning of students. In the new program, practice skills are discussed and demonstrated in a two-hour tutorial, followed by one hour of clinical simulation in the lab. During the lab, students are videotaped to facilitate the evaluation of skills. After the lab, students participate in an online discussion to review their experiences and share knowledge. Questionnaires have found that students rate higher on exam scores and demonstrate greater satisfaction and confidence using simulation compared to traditional clinical preparation (1 hour lecture + 3 hour scenario based tutorial).

Table 12: Critical care nursing education programs.

	Strengths	Limitations
In-House Programs	-designed to meet needs of the individual unit -program creators can evaluate the effectiveness of courses	-delivery of program may pull nursing educators away from other important roles -program may be condensed to meet the resource needs of the hospital -not affiliated with any educational facility -not a good distribution of economies of scale
Consortium Approach	-designed to meet needs of hospitals -variety of sources provide input into the program -classes may rotate to different hospitals, providing new learning experiences -affiliated with an educational facility -large group of nurses receive a similar education (portability of standards and competencies)	-hospitals lose some of their individual needs to make compromises for the group
College-Based Programs	-courses available part-time, providing flexibility for nurses -nurses who complete the program receive a certificate in critical care -often recognize prior learning	-may take a long time for nurses to become fully competent in critical care settings -nurses have to cover tuition independently -curriculum is not developed in collaboration with hospitals, which may lead to a theory-practice gap -courses are run according to the number of nurses who register and may be cancelled
Hospital Programs Based in Academic Centres	-nurses who complete the program receive a certificate in critical care -curriculum is develop in collaboration with hospitals, which reduces the practice-theory gap -hospitals leaders are aware of course material and can evaluate of the effectiveness of courses -meets the needs of hospitals investing in the program -hospitals cover tuition and wages	-there is some compromise in curriculum to meet needs of all participating hospitals -it is costly for hospitals to support students -cost of program exceeds revenue of program for colleges
E-Learning	-courses can be completed on the nurses' own time -cost effective (can be delivered to a large or small group of students at the same cost) -promotes independent learning	-nurses could miss out on important dialogues if not on-line -there is a lack of group interaction and the group process is an integral component of successful orientation -requires a lot of motivation and discipline to complete course content -requires some technical orientation for utilization by both instructors and students
Distance Education	-courses can be completed on the nurses' own time -promotes independent learning	-there is a lack of group interaction and the group process is an integral component of successful orientation -requires a lot of motivation and discipline to complete course content
Simulation Labs	-promotes independent learning -students learn through problem solving and the their own mistakes they may encounter are on a mannequin as opposed to a real patients -increased confidence through more practical experience without the pressure of actually being in the ICU environment	-expensive to implement, update and maintain technological equipment -requires skilled technologists to run labs -scenarios have some degree of structure which may take away for the authenticity of real life clinical experiences

5.3.7 Strengths and Limitations of Critical Care Nursing Education Programs

Table 12 describes the strengths and limitations of the critical care nursing education programs described in 5.3.1 – 5.3.6. As indicated by this table, no single method stands out as being a truly superior method of providing training for critical care nurses. Strengths and limitations are associated with every education program. Further, specific education programs may be more appropriate for individual nurses or critical care units than others.

The variety of critical care nurse education programs suggests a need for flexibility in the provision of critical care nursing education. Therefore, each type of critical care nursing education program needs to be carefully evaluated against standards to ensure the provision of truly competent critical care nurses.

5.3.8 Recommendations

R10: The Critical Care Secretariat should endorse critical care nursing education programs that allow nurses to meet core competencies as set out by the standards. The Ministry should also provide support and education for the instructors delivering these programs.

R11: The Ministry should provide resources to support educators, employers, and nurses undergoing standardized critical care education.

R12: The Critical Care Secretariat should develop a made in Ontario solution to the inconsistencies in critical care nurse training, such as a strong, flexible, college-based training program for nurses in Ontario (this would be ideal given the diversity and geography of Ontario).

R13: The Critical Care Secretariat should provide resources to facilitate the transition towards a strong, flexible, college-based critical care training program for nurses to decrease the duplication of costs throughout the system.

R14: The Critical Care Secretariat should encourage colleges to coordinate with local hospitals on the design, content, and timing of college critical care courses to reduce the practice-theory gap.

Proposed Standards for Critical Care Nursing in Ontario

6.1 Rationale for Developing a Standards Document

There are several advantages to developing system level competencies and standards in critical care nursing for Ontario. Standards ensure that nursing practices are consistent with the delivery of effective critical care services. They are useful in designing critical care units as well as the development of evaluation and orientation, continuing education, and quality improvement programs. They also inform the nursing profession, other health professionals, and consumers of the expectations for critical care nursing practice (Canadian Association of Critical Care Nurses, 2004).

The importance of core standards and competencies in critical care nursing has been emphasized by numerous critical care nursing organizations, both inside and outside of Canada. Maintaining critical care nursing standards ensures the delivery of competent and safe patient care. Also, standards are vital to support nurses in other areas of their professional development such as career development, research, and leadership opportunities.

6.2 Description of Standards

The proposed Standards were developed in an effort to identify and describe desirable and achievable critical care nursing competencies with the intent to standardize critical care nursing practice within the province of Ontario (Appendix F). The Critical Care Nursing Standards of Ontario are based on the Standards of Nursing Practice of the College of Nurses of Ontario (CNO) and the Canadian Association of Critical Care Nurses (CACCN), and are organized into five major categories:

- Professional Behaviour/Ethics
- Continuing Competence and Research
- Client and Nurse Safety/Risk Prevention
- Therapeutic and Professional Relationships/Caring
- Clinical Skills, Knowledge, Integration and Critical Thinking

Each category consists of competency statements and their associated criteria or performance behaviors. The criteria are taken directly from the CACCN Standards for Critical Care Nursing Practice. The CACCN Structure of the Critical Care Unit is also incorporated to identify the key infrastructure necessary to support critical care nursing practice in the province of Ontario.

Competence is based on the critical care nurse's ability to integrate and apply knowledge based on judgment, skill level, and previous experience. The critical care nurse applies specific knowledge and builds upon previous

experiences to progress along the continuum from novice to expert critical care nurse. The competency statements and criteria are further stratified according to the Level of Acuity (Care) of patients as defined in the final report of the Ontario Critical Care Steering Committee. This is to allow nurses in all critical care settings to use the document and identify their leaning needs and competencies.

6.3 Dissemination of Standards

The Standards will first be disseminated through a comprehensive email to key individuals, which will include a link to a webpage. A Webcast by the Critical Care Nurse Training Standards Task Group and an address by Sue Matthews and/or Hugh MacLeod will help reinforce the importance of the Standards to enhancing the quality of critical care. A communication sub-committee of the Critical Care Nurse Training Standards Task Group will be developed to facilitate the dissemination process.

6.3.1 Comprehensive Email

Standards will be disseminated through comprehensive emails to CNOs, CEOs, critical care medical directors, critical care LHIN leaders, and colleges. These emails will briefly describe the process used, people involved, and rationale for the Standards document. They will emphasize incentives to comply with Standards for hospitals, nurses, and colleges and ways in which the Ministry will facilitate the transition to a standardized curriculum (ie. evaluation of critical care nursing training programs, development of an online training program for critical care nurses, development of an objective structured clinical evaluation tool (OSCE), and funding of labs in rural and remote areas. Further, these emails will notify individuals about the Webcast to introduce the new Standards document, and direct individuals to the Critical Care Secretariat's web page for further information.

6.3.2 Webpage

A webpage will be developed to provide further detail about the Standards and critical care nursing education initiatives. This webpage will include information related to the current state of critical care nurse training in Ontario, the Ministry's key objectives for critical care nursing education, the Critical Care Nurse Training Standards Task Group's mandate and membership, incentives to comply with Standards, and ways in which the Ministry will facilitate the transition to a standardized curriculum. In addition, the webpage will feature frequently asked questions and users will have the ability to submit questions to the Critical Care Secretariat.

6.3.3 Webcast

A Webcast by Jocelyn Bennett and Wendy Fortier (co-chairs of Critical Care Nurse Training Standards Task Group) will introduce the new Standards document. Individuals will have an opportunity to access the presentation and submit questions to the Critical Care Secretariat prior to the Webcast.

6.3.4 Address by Sue Matthews and/or Hugh MacLeod

The Standards and the other critical care nursing education initiatives will be reinforced by an address by Sue Matthews and/or Hugh MacLeod.

6.3.5 Linkage to Performance Coaching Team Activities

The implementation of the Performance Coaching Teams provides the opportunity to introduce and reinforce the importance and use of the standards. For example, the Unit Assessment Team may find it helpful to refer to/reinforce the use of the standards in enhancing care within a unit.

6.4 Evaluation of Standards

6.4.1 Evaluating the Progress of Implementing Standards

The Ministry will collect information on several nurse-sensitive process indicators to evaluate the progress of hospitals in implementing Standards. These process indicators will include the following:

- Nurse turnover in the ICU
- Measure of nursing satisfaction in the ICU
- Quality of care in the ICU as perceived by the nurse
- Number of certified nurses
- The amount the hospital pays on in-house orientation/year (direct + indirect costs)
- Paid hours on education
- Paid hours on orientation
- Percent full time nurses
- Sick time
- Average age of nurses in ICU
- Number of nurses hired with a credential in critical care that the hospital didn't have to train

6.4.2 Identifying Critical Care Training Programs that Meet Standards

In 2006/07, a consultant hired by the Ministry will evaluate all existing college critical care programs in order to determine whether they meet the identified Standards in critical care nursing. Recommendations will be provided to each of the colleges for any required enhancements to meet the Standards. The consultant will also evaluate in-house orientation programs that believe they meet the identified Standards. Hospitals will have an opportunity to submit an application to the Critical Care Secretariat to be considered for this evaluation.

The Ministry will only help reimburse hospitals that train critical care nurses through programs that meet Standards.

6.4.2 Review/Maintenance of Standards

Standards will be reviewed and maintained by a clearly defined Committee supported by the Critical Care Secretariat and made up of nursing experts. Standards will be reviewed on a biannual basis. They will be modified if

the CACCN or CNO standards are altered, if there is a revision of the nomenclature, or if there are clear definitions for the levels of critical care.

Recommendations

R1: The Critical Care Secretariat should audit in-house hospital-based training programs to explore: 1) the content of didactic and clinical training; 2) the quality of didactic and clinical training; and 3) the evaluation of learning.

R2: The Critical Care Secretariat should audit college-based training programs to explore: 1) the quality of didactic and clinical training; and 2) their congruence with standards in critical care nursing.

R3: The Critical Care Secretariat should increase accessibility to college-based critical care nurse training programs, particularly in rural and remote areas of Northern Ontario (i.e. e-learning or distance education).

R4: The Critical Care Secretariat should provide resources to reduce the financial burden of hospitals that put nurses through in-house training programs or college-based training programs that meet standards.

R5a: The Critical Care Secretariat should establish a set of province-wide competency-based standards building on the standards of professional nursing organizations, especially the CACCN and CNO, as these represent competent, safe and ethical patient care. Standards should be comprehensive, realistic, and easily transferable. They should be used as framework for both critical care curriculum and assessment of clinical practice. They should also be adapted to incorporate the philosophy, beliefs, and values of individual hospitals.

R5b: Hospitals should develop a process for the implementation and evaluation of standards. This should include tools for the evaluation of competencies both after orientation and while working in critical care areas.

R6: Province-wide competency-based standards should support and motivate nurses to further develop their careers in research, planning, and leadership.

R7: The Ministry should allocate resources to support nurses and their employers when they participate in quality assurance programs, research initiatives, conferences, and nursing and multidisciplinary activities.

R8: The Critical Care Secretariat should create different pathways for nurses to enter training programs; such as credit (exemption) for certain courses to ensure all nurses are appropriately challenged. This will require a process of evaluation of nurses' prior learning (ie. OSCE - Objective Structured Clinical Examination).

R9: The Ministry should provide credit transfers (recognition or prior learning) towards higher educational pursuits (ie. credits towards bachelor degrees) in college-based critical care programs.

R10: The Critical Care Secretariat should endorse critical care nursing education programs that allow nurses to meet core competencies as set out by the standards. The Ministry should also provide support and education for the instructors delivering these programs.

R11: The Ministry should provide resources to support educators, employers, and nurses undergoing standardized critical care education.

R12: The Critical Care Secretariat should develop a made in Ontario solution to the inconsistencies in critical care nurse training, such as a strong, flexible, college-based training program for nurses in Ontario (this would be ideal given the diversity and geography of Ontario).

R13: The Critical Care Secretariat should provide resources to facilitate the transition towards a strong, flexible, college-based critical care training program for nurses to decrease the duplication of costs throughout the system.

R14: The Critical Care Secretariat should encourage colleges to coordinate with local hospitals on the design, content, and timing of college critical care courses to reduce the practice-theory gap.

Literature Cited

8.1 Internet Resources

Australian College of Critical Care Nurses. (2003). *Intensive Care Nursing Staffing*. Retrieved January 2006, from http://www.acccn.com.au/.

Australian College of Critical Care Nurses. (1999). *Postgraduate Critical Care Nursing Education.* Retrieved January 2006, from http://www.acccn.com.au/.

College of Nurses of Ontario. (2002). *The Compendium of Standards of Practice for Nurses in Ontario*. Retrieved January 2006, from http://www.cno.org/pubs/compendium.html.

College of Nurses of Ontario. (2003). *Competency Review Tool*. Retrieved January 2006, from http://www.cno.org/docs/qa/44028_CRT.pdf.

E-learning Guru: Glossary. Retrieved February 2006, from http://www.e-learning guru.com/glossary/e.thm.

World Federation of Critical Care Nurses. (2005). *Position Statement on the Provision of Critical Care Nursing Education*. Retrieved January 2006, from http://www.wfccn.org/webdocs/.

World Federation of Critical Care Nurses. (2005). *Declaration of Buenos Aires Position Statement*. Retrieved January 2006, from http://www.wfccn.org/webdocs/.

1.2 Publications from Professional Organizations

America Association of Critical Care Nurses. (2000). Standards for Acute and Critical Care Nursing Practice.

America Association of Critical Care Nurses. (2005). Essentials of Critical Care Orientation: Frequently Asked Questions.

Canadian Association of Critical Care Nurses. (2004). Standards for Critical Care Nursing Practice.

Department of Health, UK. (2000). The Nursing Contribution to the Provision of Comprehensive Critical Care for Adults: A Strategic Program of Action.

Mount Sinai Hospital. (2002). Mount Sinai Hospital Standards for Critical Care Nursing Practice.

8.3 Peer-Reviewed Journal Articles

Andrews B, Birkett K, Bullock S. (1997) A proposed credentialing model for Australian critical care courses. *Australian Critical Care*, pp. 128-130.

Angood PB, Angus DC, Clemmer TP, et al. (2004). Guidelines for critical care medicine training and continuing medical education. *Critical Care Nursing* 32(1), pp. 263-272.

Benbow EW, Harrison I, Dornan TL, et al. (1998) Pathology and the OSCE: Insights from a pilot study. *Journal of Pathology* 184, pp. 110-14.

Connelly, LM. (1998) A research-based model of nursing orientation. Journal of Nursing Staff Development 14, pp. 31-39.

Dance S, Eagle J, Evans LA. (1998) What Are The Factors That Influence Learning In Relation To Nursing Practice? *Journal for Nurses in Staff Development* 14(3), pp. 147-153.

Docherty C, Hoy D, Topp H. (2005). E-learning techniques supporting problem based learning in clinical simulation. *International Journal of Medical Informatics* 74, pp.527-533.

Field T. (2002). Critical care nurses: professional development in the private sector. *Australian Critical Care* 15(2), pp. 71-76.

Fielding S, Soence D. (2002). Win-win-win: Collaboration advances critical care Practice. *Contemporary Nurse* 13 (2-3), pp. 223-228.

Giblin C, Pooler C, Simpson N. (2005). Knowledge and skill acquisition for critical care nursing practice. *Canadian Critical Care Nurses Association* 16(1), pp. 21-23.

Glen S. (2005). E-learning in nursing education: lessons learnt? *Nurse Education Today* 25, pp. 415-417.

Hart LB. (2000). Integrating technology and tradition teaching methods to stimulate different cognitive styles in a critical care course. *Journal for Nurses in Staff Development* 16(1). pp. 31-33.

Howatson-Jones L. (2004). Designing web-based education courses for nurses. Nursing Standard 19(11), p. 41-44.

Jeffries PR. (2005). Development and testing of a hyper-learning model for design of an online critical care course. *Journal of Nursing Education* 44(8), pp. 366-372 .

Jones TL, Clark Mims B, Luecke LE. (2001). Two Successful Models for Preparing Competent Critical Care Nurses. *Critical Care Nursing Clinics of North America* 13(1), pp. 35-45.

Jones M. (2002). Critical Care Competencies. *Nursing in Critical Care*,7(3), pp. 111-120.

McGaughey J. (2004). Standardizing the assessment of clinical competence: an overview of intensive care course design. *Nursing in Critical Care* 9(5), pp. 238-246.

McKinley S. (2001) Critical care education is given a redesign. *Nursing Times* 97(27) pp. 34-35.

Oermann MH. (1991). Effectiveness of a critical care nursing course: Preparing students for practice in critical care. *Heart & Lung: Journal of Critical Care* 20(3), pp. 278-279.

Rashotte J, Thomas M. (2002). Incorporating Educational Theory into Critical Care Orientation. *The Journal Education in Nursing* 33(3), pp. 131-137.

Rice V. (2001). The Critical Care Consortium; Maximizing Continuing Education Dollars. *Critical Care Educator* 13(1), pp. 23-34.

Story EL. (1988). A Teaching Strategy to Facilitate Conceptual Model Implementation in Practice. *The Journal of Continuing Education in Nursing* 19(6), pp. 244-247.

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Appendix B: Critical Care Nursing Competencies and Standards Questionnaire

1. Which of the following would best describe the type of critical care unit the questionnaire is being completed for?

   ☐ Medical ICU ☐ Burn Unit

   ☐ Surgical ICU ☐ Trauma Unit

   ☐ Combined Medical/Surgical ICU ☐ Other: *Please specify:* _____

2. What is the total number of beds in this unit? _____

3. Which of the following training programs does this unit use to prepare nurses new to critical care for practice in that setting? *(Please include the duration in weeks of didactic and clinical training)*

	Weeks Didactic	Weeks Clinical
College Certification	_____	_____
In-House Orientation	_____	_____
Preceptorship	_____	_____
Other: *Please specify:* _____	_____	_____

4. Do you have written standards of practice for nurses in your unit?

   ☐ Yes ☐ No *(go to question 8)*

5. If ***yes***:

   a. How often does your unit update these specific standards?

   _____

   b. Which national or provincial standards are most reflected in your documents? *(Check all that apply)*

   ☐ Canadian Association of Critical Care Nurses
   ☐ American Association of Critical Care Nurses
   ☐ College of Nurses of Ontario
   ☐ Other: *Please specify:* _____
   ☐ None

c. Are your documents inclusive of competency statements?

Examples:
I set priorities according to the urgency of the patient's presentation.
I interact effectively with the interdisciplinary team.
I plan interventions in collaboration with patients, families, and other members of the health care team to formulate the overall plan of care.

□ Yes □ No

d. Are your documents inclusive of an evaluation component?

□ Yes □ No *(go to question 7)*

6. If ***yes***:

a. How frequently are nurses evaluated? _____

b. Is documentation provided at that time? □ Yes □ No

c. Is written peer review a required component? □ Yes □ No

7. Would you be willing to share your document(s)?

□ Yes, I have enclosed the document(s)
□ Yes, I will supply the document(s) on this date: *(Please specify)* _____
□ No

8. We welcome any specific feedback you may have about critical care nursing core competencies and standards. Please share your top three comments or suggestions with us.

1. _____

2. _____

3. _____

Appendix C: Critical Care Nursing College Programs Questionnaire

1. Is your program offered full-time or part-time?

2. How long is your program (total hrs)?

3. How long does it take to complete the program (receive critical care certification)?

4. How many students are in the program (per class/entire program)?

5. What are the prerequisites?

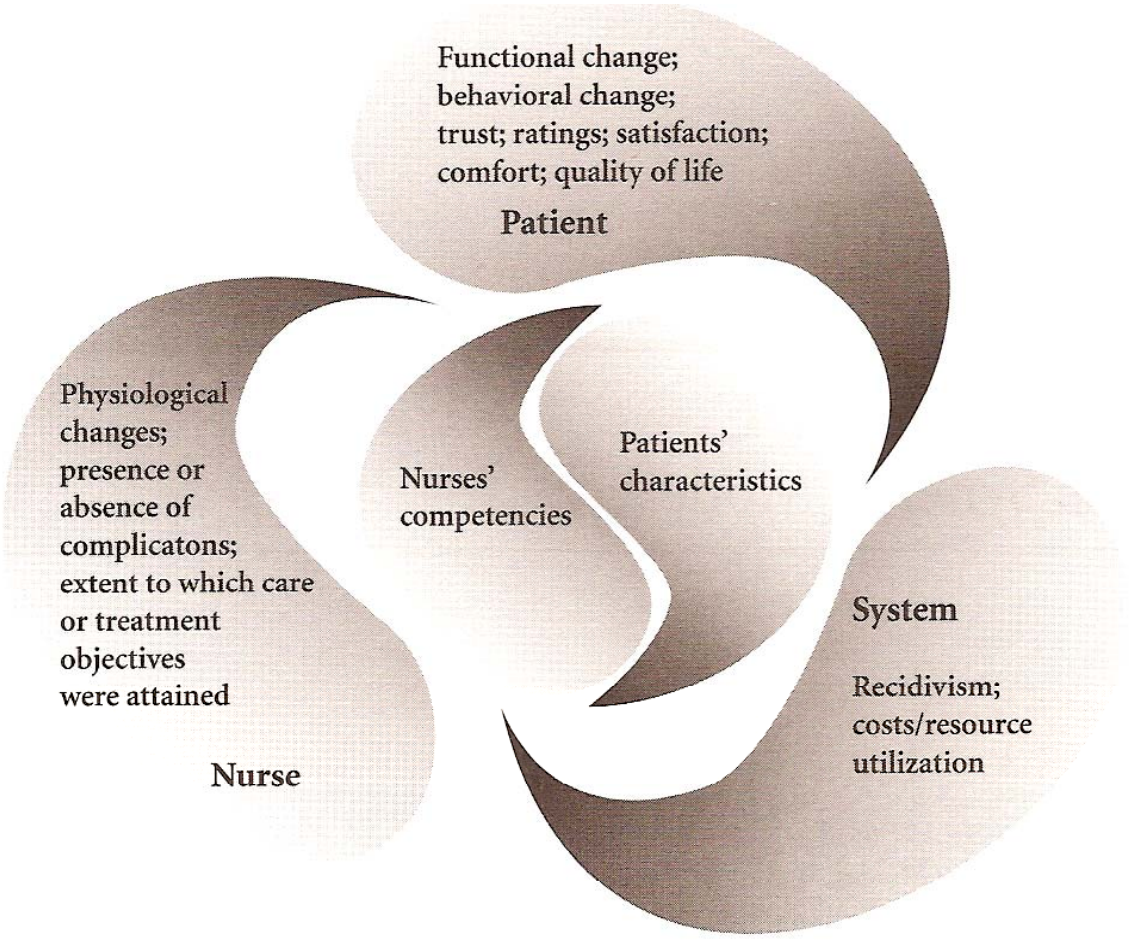
6. What is the cost of the program?

7. How long is the clinical component?

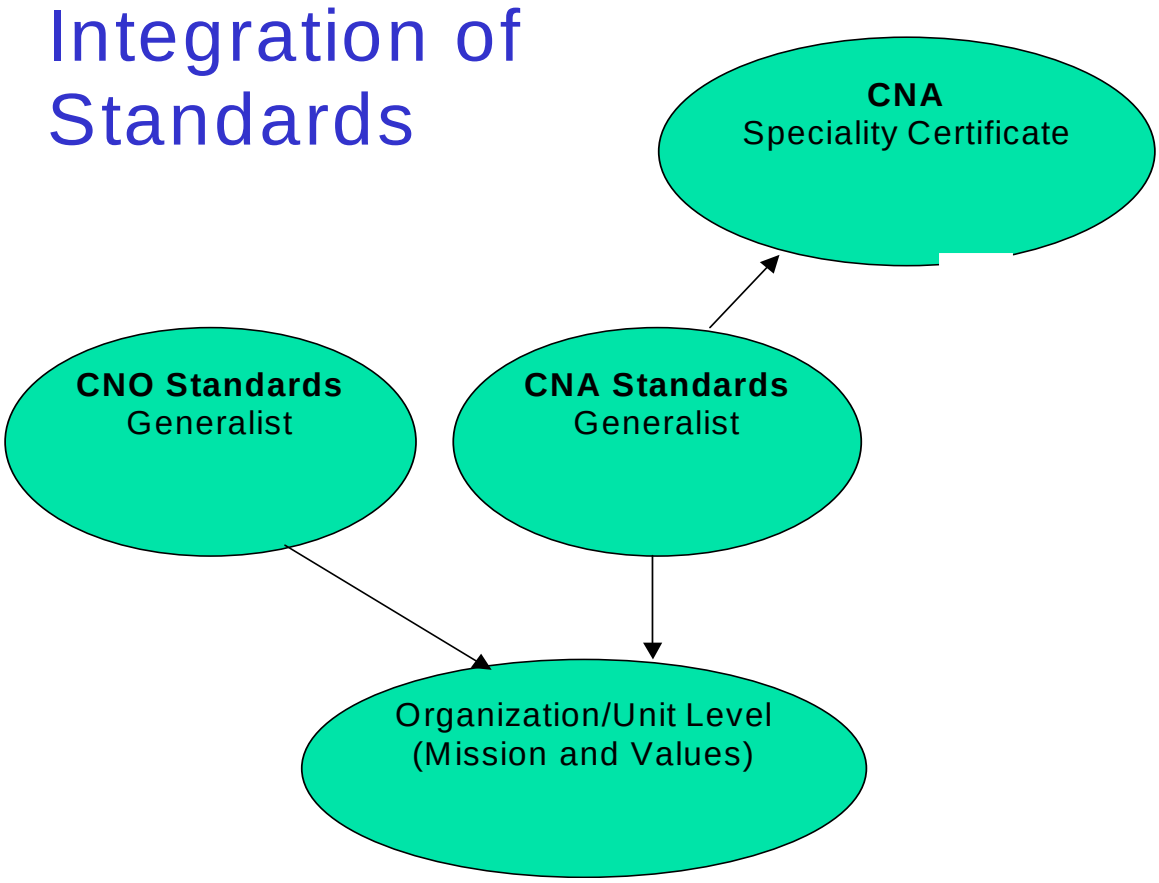
8. How long in the didactic component?

9. Do you have any other comments?

Appendix D: American Association of Critical Care Nurses Synergy Model



Appendix E: Integration of Standards for Proposed Model



Appendix F: Standards for Critical Care Nursing in Ontario

PREAMBLE

Critical Care Nursing Standards were developed in an effort to identify and describe desirable and achievable critical care nursing competencies with the intent to standardize critical care nursing practice within the province of Ontario. The Critical Care Nursing Standards of Ontario are based on the Standards of Nursing Practice of the College of Nurses of Ontario (CNO) and the Canadian Association of Critical Care Nurses (CACCN), and are organized into five major categories:

- Professional Behaviour/Ethics
- Continuing Competence and Research
- Client and Nurse Safety/Risk Prevention
- Therapeutic and Professional Relationships/Caring
- Clinical Skills, Knowledge, Integration and Critical Thinking

Each category consists of competency statements and their associated criteria or performance behaviors. The criteria are taken directly from the CACCN Standards for Critical Care Nursing Practice. The CACCN Structure of the Critical Care Unit is also incorporated to identify the key infrastructure necessary to support critical care nursing practice in the province of Ontario.

Competence is based on the critical care nurse's ability to integrate and apply knowledge based on judgment, skill level, and previous experience. The critical care nurse applies specific knowledge and builds upon previous experiences to progress along the continuum from novice to expert critical care nurse. The competency statements and criteria are further stratified according to the Level of Acuity (Care) of patients as defined in the final report of the Ontario Critical Care Steering Committee.

The recommended elements of the Level of Acuity are as follows:

Level 3	• Service to meet the needs of patients who require advanced or prolonged respiratory support alone, or basic respiratory support together with the support of at least two organ systems.
Level 2	• Service to meet the needs of patients who require more detailed observation or intervention including support for a single failed organ system, short-term ventilation, post-operative care, or patients "stepping down" from higher levels of care. • Patient transfer agreements and patient stabilization/transfer protocols to transfer patients to a Level 3 service. • Management may involve remote support provided in collaboration with a Level 3 service (i.e., telemedicine, eICU).
Level 1	• Service to meet the needs of patients at risk of their condition deteriorating, or those recently relocated from higher levels of care, whose needs can be met on an acute ward with additional advice and support from a critical care team. • Patient transfer agreements and patient stabilization/transfer protocols to transfer patients to Level 2 or 3 services as required. • Management may involve remote support provided by a Level 3 service (i.e., telemedicine, eICU).

TERMINOLOGY

Caring:

A fundamental part of the nurse-client relationship is caring. Caring is demonstrated in the behavior actions and attributes of the nurse. Generally, caring requires recognizing clients as unique individuals whose goals are promoted by nurses (College of Nurses of Ontario, 2003).

Clinical Skills:

Nurses are required to demonstrate competence in their nursing practice through integration of knowledge and skills in order to perform nursing interventions competently. Interventions include thorough patient assessment, safe practice in patient care, medication administration and appropriate documentation (College of Nurses of Ontario, 2003).

Competence:

The ability of a nurse to integrate the professional attributes required to perform in a given role, situation, or practice setting. Professional attributes include, but are not limited to knowledge, skill, judgment, attitudes, values, and beliefs (College of Nurses of Ontario, 2003).

Critical Care Nurse:

Critical care nurses are highly knowledgeable and skilled health care professionals that work in a critical care unit in collaboration with members of the health care team to provide optimum holistic care. The skills and knowledge of critical care nurses may be directed towards health promotion, prevention, maintenance, rehabilitation/restoration or palliation in care of critically ill patients. Critical care nurses maintain professional competence through ongoing education, research and skill development and strive to provide evidenced-based practice through promotion of research within their specialty areas (Canadian Association of Critical Care Nurses, 2004). Nurses are prepared through an undergraduate program. Critical care specialist training is usually provided in the critical care unit.

Critical Thinking:

When assessing and managing client responses to various health conditions the nurse uses critical thinking to problem-solve. This is integral to making good decisions and includes activities of organizing and analyzing information, recognizing patterns, and gathering data to support conclusions drawn (College of Nurses of Ontario, 2003).

Leadership:

The nurse demonstrates leadership by identifying a situation that compromises safe, effective, ethical care, and advocates for changes to support the well-being of clients. The nurse demonstrates leadership at the unit level, the organizational level, the professional organizational level, and the political, provincial, or federal level (College of Nurses of Ontario, 2003).

Professional Behaviour/Ethics:

The nurse demonstrates accountability to the public and is responsible in his/her practice to meet legislative requirements and demonstrate the standards of the profession. This demonstration includes ensuring and respecting client choices in decision making, promoting client well-being, assuring privacy and maintaining confidentiality, maintaining commitment to the client, self, profession, and employer and respecting sanctity and quality of life (College of Nurses of Ontario, 2002; College of Nurses of Ontario, 2003).

Professional Nurse/Multidisciplinary Team Member Relationship:

The nurse is required to interact with other health care providers. The relationships must be professional and based on trust and respect (College of Nurses of Ontario, 2003).

Research:

The nurse engages in research to ensure his/her practice is current and consistent with best–practice evidence. This involves questioning and appraising information, and exercising judgment when integrating new knowledge into practice (College of Nurses of Ontario, 2003).

Safety:

The nurse is responsible for taking measures to promote safety for both clients and colleagues. The nurse enables the patient and colleagues avoid injury and illness by taking measures in their prevention, responding to risks, challenging questionable orders and actions, and intervening appropriately in situations of risk (College of Nurses of Ontario, 2003).

Standards of Practice:

Critical care nursing standards are statements that describe the level of performance expected of registered nurses in critical care practice (Canadian Association of Critical Care Nurses, 2004). The three major components are professional standards, practice expectations, and legislation. “All standards of practice provide a guide to the knowledge, skills, judgment and attitudes that are needed to practice safely” (College of Nurses of Ontario, 2002).

Therapeutic Professional Nurse/Patient Relationships:

The nurse is responsible for the establishment of a therapeutic nurse-client relationship, which focuses on the need of the client. The relationship is based on respect, trust, intimacy, and appropriate use of power. A professional therapeutic relationship involves establishing and maintaining appropriate boundaries and recognizing when the relationship crosses therapeutic boundaries (College of Nurses of Ontario, 2003).

Category 1: Professional Behavior/Ethics

Competency Statement	Criterion	L3	L2	L1
Outcome Standard 1 The critical care nurse practices within the scope of professional, legal, and ethical standards	1.1 The critical care nurse contributes positively to the image of nursing.	X	X	X
	1.2 The critical care nurse contributes positively to the image of the critical care unit (e.g. education, ongoing information about care).	X	X	X
	1.3 The critical care nurse ensures confidentiality of the patient/family information and reports infractions.	X	X	X
	1.4 The critical care nurse maintains professional competence through education.	X	X	X
	1.5 The critical care nurse ensures patient and family privacy within the limits of the environment.	X	X	X
	1.6 The critical care nurse follows guidelines for notification of reportable incidents (e.g. communicable diseases, abuse).	X	X	X
	1.7 The critical care nurse follows guidelines for reporting data to appropriate agencies (e.g. coroner, policy)	X	X	X
	1.8 The critical care nurse identifies potential candidates of tissue and organ procurement.	X	X	X
	1.9 The critical care nurse responds to environmental, physical, and psychosocial stress factors which impact interdisciplinary team members in the critical care setting.	X	X	X
	1.10 The critical care nurse participates in critical care nursing research and incorporates research findings into practice.	X	X	X
	1.11 The critical care nurse recognizes the delineation between the practice of critical care nursing and the practice of critical care medicine.	X	X	X
	1.12 The critical care nurse responds to professional, legal, and ethical issues.	X	X	X

Category 2: Continuing Competence and Research

Competency Statement	Criterion	L3	L2	L1
Outcome Standard 2 (Structure of the Critical Care Unit) Qualified personnel are provided by the health care facility	2.1 Staff Nurses, with post-basic preparation or experience in critical care nursing are responsible for direct patient and family care.	X	X	X
	2.2 The health care facility develops, in collaboration with the critical care nursing staff, written guidelines of the skills required to differentiate novice from expert critical care nurses.	X	X	X
	2.3The health care facility ensures that all critical care nursing personnel receive a performance appraisal, in accordance with the hospital's policies, which is based on the written job description, discussed with the staff members involved, and includes a process for the development of mutually agreed upon goals and objectives.	X	X	X
Outcome Standard 3 (Structure of the Critical Care Unit) A Critical Care Committee is established by the health care facility.	3.1 The Critical Care Committee should have broad representation from all levels of critical care nursing, medicine, other health care professionals involved in patient care and, if possible, consumer representation.	X	X	X
	3.2 The Critical Care Committee should act in an advisory or decision making capacity with responsibilities for, but not limited to:	X	X	X
	• 3.2.1 Policies and procedures	X	X	X
	• 3.2.2 Program development and evaluation	X	X	X
	• 3.2.3 Structural planning	X	X	X
	• 3.2.4 Unit philosophy, goals, and objectives	X	X	X
	• 3.2.5 Conflict resolution between disciplines or departments	X	X	X
	• 3.2.6 Establishment of a mechanism for resolving issues related to insufficient resources	X	X	X
	• 3.2.7 Unit quality improvement activities	X	X	X
	• 3.2.8 Analysis of statistical data on unit utilization	X	X	X
	3.3 The Critical Care Committee approves written information regarding the critical care unit including, but not limited to:	X	X	X
	• 3.3.1 Unit philosophy, goals, and objectives	X	X	X
	• 3.3.2 Organization chart	X	X	X
	• 3.3.3 Dependent nursing responsibilities	X	X	X
	• 3.3.4 Medical responsibilities	X	X	X
	• 3.3.5 Roles and responsibilities of other health professionals in the unit	X	X	X
	3.4 The Critical Care Committee approves written policies and procedures specific to the critical care unit including, but not limited to:	X	X	X
	• 3.4.1 Admission, transfer, and discharge criteria	X	X	X
	• 3.4.2 Fire, disaster and evacuation plans	X	X	X
	• 3.4.3 Medication administration	X	X	X
	• 3.4.4 Transfer of medical function(s) and shared competencies	X	X	X
	• 3.4.5 Protocols for management of specific patient populations	X	X	X

Category 3: Client and Nurse Safety/Risk Prevention

Competency Statement	Criterion	L3	L2	L1
Outcome Standard 4 Interventions based upon the actual and potential nursing diagnoses are planned by the critical care nurse, in collaboration with other members of the interdisciplinary health care team, to formulate the overall plan of care.	4.1 The critical care nurse incorporates safety measurements for the patient, family, and members of the health care team when developing the plan of care.	X	X	X
Outcome Standard 5 (Structure of the Critical Care Unit) Opportunities for critical care nurses to maintain the knowledge and skill necessary to deliver safe and knowledgeable nursing care, within the context of the chosen conceptual model of nursing practice, are provided by the health care facility.	5.1 The health care facility develops criteria for hiring nurses based on the knowledge and skill requirements of the job.	X	X	X
	5.2 The health care facility provides an orientation program in which the orientee is supernumerary and the orientation program:	X	X	X
	• 5.2.1 Is based on a learning needs assessment	X	X	X
	• 5.2.2 Includes specific unit philosophy, goals, policies and procedures, as well as an organizational chart	X	X	X
	• 5.2.3 Includes physical layout and instructions in the use of unit equipment	X	X	X
	• 5.2.4 Includes a clinical and theoretical component, the content and length of which is based on the level and type of the unit	X	X	X
	5.3 The health care facility provides continuing education programs on the following:	X	X	X
	• 5.3.1 New or revised policies and procedures	X	X	X
	• 5.3.2 The use of new or updated equipment	X	X	X
	• 5.3.3 Roles and responsibilities of the critical care nurse, including the role of charge nurse and preceptor	X	X	X
	• 5.3.4 Role of the critical care nurse on the health care team	X	X	X
	• 5.3.5 Theory pertinent to the patient population and needs of critical care nurses	X	X	X
	• 5.3.6 Critical incident stress management for all staff members	X	X	X
	• 5.3.7 The use and fitting of personal protective equipment for all staff involved in patient care	X	X	X
	5.4 The health care facility evaluates the knowledge and competencies of the critical care nurse.	X	X	X
	5.5 The health care facility establishes/maintains a current and accessible library of reference materials relevant to the patient population.	X	X	X

Category 4: Therapeutic and Professional Relationships/Caring

Competency Statement	Criterion	L3	L2	L1
Outcome Standard 6 Based upon knowledge of biological, physical, and behavioral sciences, data are analyzed by the critical care nurse to formulate nursing diagnoses.	6.1 The critical care nurse discusses significant findings with other members of the health care team.	X	X	X
Outcome Standard 7 Interventions based upon the actual and potential nursing diagnoses are planned by the critical care nurse, in collaboration with other members of the interdisciplinary health care team, to formulate the overall plan of care.	7.1 The critical care nurse collaborates with patient, family, and other health care team members to establish an individualized and holistic plan of care.	X	X	X
Outcome Standard 8 The critical care nurse implements the plan of care including independent and interdependent nursing functions.	8.1 The critical care nurse optimizes communication with the patient and family by:	X	X	X
	• 8.1.1 Using nonverbal strategies (e.g. lip reading, gestures, posturing, eye contact, touch, eye blinking)	X	X	X
	• 8.1.2 Using assistive age-appropriate devices (e.g. communication boards, talking tracks, mechanical voice boxes)	X	X	X
	• 8.1.3 Encouraging and teaching the family and other members of the health care team to communicate with the patient	X	X	X
	• 8.1.4 Involving the family in interpreting the patient's efforts to communicate with the patient	X	X	X
	8.2 The critical care nurse intervenes to facilitate optimal family processes by:	X	X	X
	• 8.2.1 Using language that is consistent with level of understanding	X	X	X
	• 8.2.2 Providing an opportunity for the patient/family to verbalize feelings and concerns, using interpreters when needed	X	X	X
	• 8.2.3 Demonstrating concern and acceptance through sincere and empathetic verbal and nonverbal communication	X	X	X
	• 8.2.4 Providing honest and realistic information to the patient/family	X	X	X
	• 8.2.5 Providing ongoing support	X	X	X
	• 8.2.6 Providing frequent and regular exchanges of information	X	X	X
	• 8.2.7 Using principles of crisis intervention	X	X	X
	• 8.2.8 Initiating internal/external referrals	X	X	X
	• 8.2.9 Providing opportunity and privacy for patient/family interaction	X	X	X
	• 8.2.10 Facilitating partnerships and decision-making with family members	X	X	X

Competency Statement	Criterion	L3	L2	L1
	8.3 The critical care nurse promotes realistic hope for the patient and family by:	X	X	X
	• 8.3.1 Encouraging and exploring the verbalization of feelings	X	X	X
	• 8.3.2 Providing opportunities to make informed choices	X	X	X
	• 8.3.3 Educating the patient and family about nursing and collaborative interventions based on learning needs	X	X	X
	• 8.3.4 Involving the family in direct patient care	X	X	X
Outcome Standard 9 The critical care nurse evaluates patient outcomes in accordance with a conceptual model for critical care nursing and consistent with independent nursing functions.	9.1 The critical care nurse reports and discusses significant differences between actual and expected outcomes with the appropriate interdisciplinary team members.	X	X	X
Outcome Standard 10 Therapeutic relationships with patients and families are developed and maintained by the critical care nurse.	10.1 The critical care nurse acts in the capacity of patient and family advocate.	X	X	X
	10.2 The critical care nurse develops a therapeutic relationship with patients and families often within a limited time frame.	X	X	X
	10.3 The critical care nurse facilitates patient and family adaptive coping with stressors related to the illness and the environment.	X	X	X
	10.4 The critical care nurse communicates relevant data and the plan of care to the patient and family.	X	X	X
	10.5 The critical care nurse facilitates patient and family access to resources internally and externally.	X	X	X
	10.6 The critical care nurse selects teaching strategies appropriate to the time available.	X	X	X
	10.7 The critical care nurse applies teaching methods that are appropriate to the patient's and family's readiness to learn and stage of growth and development.	X	X	X
	10.8 The critical care nurse evaluates learning outcomes and revises teaching methods and/or the learning plan as required.	X	X	X
	10.9 The critical care nurse maximizes patient and family participation and autonomy in decision-making.	X	X	X

Category 5: Clinical Skills, Knowledge, Integration and Critical Thinking

Competency Statement	Criterion	L3	L2	L1
Outcome Standard 11 Data regarding the patient's physical, emotional, and psychosocial status, as well as documentation regarding advance directives, are collected by the critical care nurse at the time of admission to the critical care unit and during the patient's stay.	11.1 The critical care nurse collects data on a continuous basis, as well as performs comprehensive/holistic data collection at the:	X	X	X
	• 11.1.1 Time of admission to the unit	X	X	X
	• 11.1.2 Beginning of each shift	X	X	X
	• 11.1.3 Change of patient assignment	X	X	X
	• 11.1.4 Change in patient's clinical status	X	X	X
	11.2 The critical care nurse collects data:			
	• 11.2.1 Using technological supports			
	- intra-aortic balloon pump, continuous hemofiltration	X		
	- mechanical ventilators, pacemakers	X	X	+/-
	• 11.2.2 Using non-invasive monitoring techniques	X	X	X
	- ECG, non-invasive blood pressure monitoring, oxygen monitoring			
	- using non-invasive/invasive monitoring techniques (e.g. arterial lines, pulmonary artery catheters)	X	+/-	
	11.3 The critical care nurse collects laboratory specimens (e.g. sputum via endotracheal tube, blood via invasive lines).	X	X	X
	11.4 The critical care nurse gathers pathophysiological, psychosocial, cultural, developmental and spiritual data based on the patient's condition.	X	X	X
	11.5 The critical care nurse obtains a comprehensive health history using all available and appropriate sources in the absence of a patient's ability to communicate.	X	X	X
	11.6 The critical care nurse gathers data concerning the family's needs and responses to the health crisis.	X	X	X
	11.7 The critical care nurse gathers data regarding infection control risks to patients and staff and takes all the necessary preventative measures to protect against exposure.	X	X	X

Competency Statement	Criterion	L3	L2	L1
Outcome Standard 12 Based upon knowledge of biological, physical, and behavioral sciences, data are analyzed by the critical care nurse to formulate nursing diagnoses.	12.1 The critical care nurse interprets physical assessment.	X	X	X
	12.2 The critical care nurse analyzes unexpected findings.	X	X	X
	12.3 The critical care nurse makes rapid decision about priorities of care.	X	X	X
	12.4 The critical care nurse anticipates and/or recognizes an actual or potential immediate life threatening health crisis including, but not limited to:	X	X	X
	• 12.4.1 Ineffective airway clearance (e.g. epiglottis, mucous plug)	X	X	X
	• 12.4.2 Ineffective breathing pattern (e.g. tension pneumothorax, flail chest)	X	X	X
	• 12.4.3 Impaired gas exchange including upper airway disease (foreign body, croup, epiglottis, postextubation stridor, laryngospasm), lower airway disease (respiratory distress syndrome, acute respiratory distress syndrome, pulmonary edema, bronchiolitis, status asthmaticus, mixed obstructive and restrictive disease, inhalation injuries) and ineffective gas exchange (pleural effusion)	X	X	X
	• 12.4.4 Alteration in cardiac output (e.g. congenital heart defects, cardiomyopathy, shock, myocardial infarction, cardiac tamponade, congestive failure, cardiac dysrhythmias)	X	X	X
	• 12.4.5 Alteration in cerebral tissue perfusion - head trauma, cerebral aneurysm, seizures, meningitis, shock, cerebral vascular accident, arteriovenous malformation) - cerebral vasospasm	X	X	X
	• 12.4.6 Alteration in gastrointestinal tissue perfusion (e.g. pancreatitis)	X	X	X
	• 12.4.7 Alteration in renal tissue perfusion (e.g. acute renal failure, congenital)	X	X	X
	• 12.4.8 Alteration in vascular tissue perfusion (e.g. compartment syndrome, abdominal aortic aneurysm, thrombosis)	X	X	X
	• 12.4.9 Alteration in integumentary tissue perfusion (e.g. burns, decubitus ulcer)	X	X	X
	• 12.4.10 Alteration in fluid balance (e.g. sepsis, ascites, SIADH, DI, hemolytic uremia)	X	X	X
	• 12.4.11 Alteration in motor and sensory function (e.g. myelomeningocele, Guillian-Barre, spinal cord injury, neurogenic shock)	X	X	X
	• 12.4.12 Ineffective thermoregulation (e.g. malignant hyperthermia, hypothermia)	X	X	X
	• 12.4.13 Alteration in liver function (e.g. hepatitis, biliary atresia, poisonings)	X	X	X
	• 12.4.14 Alterations in endocrine function (e.g. diabetic ketoacidosis)	X	X	X
	• 12.4.15 Alterations in immunologic function (e.g. graft versus host disease, transplant, systemic inflammatory response syndrome)	X	X	X

Competency Statement	Criterion	L3	L2	L1
	• 12.4.16 Alterations in hematologic function (e.g. leukemia, disseminated intravascular coagulopathy, heparin-induced thrombocytopenia, deep vein thrombosis)	X	X	X
	• 12.4.17 Altered comfort (e.g. pain, anxiety, sleep deprivation, delirium)	X	X	X
	• 12.4.18 Impaired communication (e.g. intubated, neurological deficits, developmental delay, sedation)	X	X	X
	• 12.4.19 Altered family processes (e.g. grief/loss, guilt, sudden death, sudden infant death syndrome)	X	X	X
	• 12.4.20 Altered family/patient coping (e.g. helplessness, powerlessness)	X	X	X
	• 12.4.21 Manifestations of abuse (e.g. child, spouse, elder)	X	X	X
	• 12.4.22 Altered nutritional requirements	X	X	X
	• 12.4.23 End-of-life withdrawal of treatment and/or the execution of advanced directives	X	X	X
	• 12.4.24 Organ donation and transplantation	X	X	X
	12.5 The critical care nurse interprets pertinent diagnostic data including:	X	X	X
	• 12.5.1 Arterial and venous blood gases	X	X	X
	• 12.5.2 Intracardiac pressures and waveforms (e.g. pulmonary artery, right atrial, left atrial)	X	X	X
	• 12.5.3 Central venous pressures and waveforms	X	X	
	• 12.5.4 Arterial pressures and waveforms	X	X	+/-
	• 12.5.5 Intra-aortic balloon pressures/waveforms	X	+/-	
	• 12.5.6 Hemodynamic calculated parameters (e.g. cardiac index, systemic vascular resistance index, pulmonary vascular resistance index)	X	+/-	
	• 12.5.7 Cardiac rhythm interpretation (e.g. rate, rhythm, ST elevation, T wave configuration)	X	X	X
	• 12.5.8 Twelve and 15 electrocardiogram changes consistent with myocardial injury, ischemia, or infarction	X	X	X
	• 12.5.9 Pacemaker functions (e.g. sensing and capturing)	X	X	X
	• 12.5.10 Intracranial pressures and waveforms	X	+/-	
	• 12.5.11 Cerebral perfusion pressure	X	+/-	
	• 12.5.12 Pulse oximetry	X	X	X
	• 12.5.13 End tidal carbon dioxide	X	+/-	
	• 12.5.14 Ventilation information (e.g. tidal volume, minute volume, oxygenation, rate, airway pressures, end-tidal CO2)	X	X	

Competency Statement	Criterion	L3	L2	L1
	• 12.5.15 Ventilation support - bipap - assist control, synchronized intermittent mandatory ventilation, positive and expiratory pressure, pressure support ventilation, pressure control ventilation, volume control ventilation - high frequency jet ventilation, high frequency oscillation	 X X X	 X X	 X
	• 12.5.16 Weaning parameters (e.g. tidal volume, respiratory rate, minute ventilation, vital capacity, work of breathing, anxiety)	X	X	
	• 12.5.17 Laboratory results (e.g. arterial blood gas, complete blood count, platelets, coagulation profiles, lactate, serum and urine electrolytes and osmolality, creatinine, blood urea nitrogen, CK-MB, cerebral spinal fluid, glucose, drug levels, blood gases, liver enzymes)	X	X	X
	• 12.5.18 Oxygen delivery, extraction, consumption	X	X	+/-
	12.6 The critical care nurse compares collected data with expected patient responses and validates unexpected findings.	X	X	X
	12.7 The critical care nurse integrates all findings from the assessment to identify collaborative and/or independent nursing diagnoses.	X	X	X
Outcome Standard 13 Interventions based upon the actual and potential nursing diagnoses are planned by the critical care nurse, in collaboration with other members of the interdisciplinary health care team, to formulate the overall plan of care.	13.1 The critical care nurse anticipates and prepares for life-threatening situations.	X	X	X
	13.2 The critical care nurse establishes priorities for care with the patient/family.	X	X	X
	13.3 The critical care nurse selects specific nursing interventions designed to achieve expected patient outcomes.	X	X	X
	13.4 The critical care nurse balances the science of curing with the art of caring.	X	X	X
	13.5 The critical care nurse incorporates the patient's pathophysiological, psychosocial, cultural, spiritual, and developmental needs into the plan of care.	X	X	X
	13.6 The critical care nurse formulates measurable immediate and longer-term, patient-oriented goals with the patient and/or family and health care team.	X	X	X
	13.7 The critical care nurse identifies realistic and measurable expected patient outcomes to be used in the evaluation of formulated goals.	X	X	X
	13.8 The critical care nurse validates the plan of care with the patient, family and other members of the health care team.	X	X	X
	13.9 The critical care nurse identifies required resources to accomplish the plan of care.	X	X	X
	13.10 The critical care nurse documents and revises the plan of care as necessary.	X	X	X
	13.11 The critical care nurse identifies patient and family learning needs when formulating the plan of care.	X	X	X
	13.12 The critical care nurse plans for patient and family support needs.	X	X	X

Competency Statement	Criterion	L3	L2	L1
Outcome Standard 14 The critical care nurse implements the plan of care including independent and interdependent nursing functions.	14.1 The critical care nurse implements care that reflects established priorities.	X	X	X
	14.2 The critical care nurse documents interventions in the patient's permanent record.	X	X	X
	14.3 The critical care nurse communicates significant interventions to the patient, family and other members of the health care team in a timely manner.	X	X	X
	14.4 The critical care nurse coordinates the delivery of the patient's care.	X	X	X
	14.5 The critical care nurse intervenes to provide effective airway clearance by:			
	• 14.5.1 Positioning (e.g. head of bed 30° unless contraindicated)	X	X	X
	• 14.5.2 Managing airway (e.g. jaw thrust/chin lift, artificial airways, sniffing position)	X	X	X
	• 14.5.3 Managing the endotracheal tube/LMA - sizing, hyperoxygenation, suctioning, cuff management, tapes/ties - tracheostomy, tracheobronchial toilet	X	X	
	• 14.5.4 Administering pharmacologic agents (e.g. bronchodilators)	X	X	X
	• 14.5.5 Managing secretions (e.g. chest percussion, vibration, postural drainage)	X	X	X
	14.6 The critical care nurse intervenes to correct an ineffective breathing pattern by:			
	• 14.6.1 Administering pharmacologic agents as ordered (e.g. oxygen, reversal agents, analgesics, sedatives neuromuscular blocking agents)	X X	X X	X
	• 14.6.2 Troubleshooting inadequate mechanical supports (e.g. disconnected ventilator, poor fitting, bipap mask, asynchrony between patient and the support device)	X	X	
	• 14.6.3 Manually ventilating (e.g. bag-valve apparatus)	X	X	X
	• 14.6.4 Assisting with interventions (e.g. intubation, chest tube insertion)	X	X	+/-
	14.7 The critical care nurse intervenes to correct impaired gas exchange by:			
	• 14.7.1 Managing changes in oxygenation (e.g. oxygen, continuous positive airway pressure, positive end expiratory pressure, proning)	X	X	
	• 14.7.2 Managing changes to manipulate minute ventilation (e.g. mode-assist control, synchronized intermittent mandatory ventilation)	X	X	
	• 14.7.3 Managing changes to adjust pressure support ventilation	X	X	
	• 14.7.4 Managing changes to manipulate pressure-controlled ventilation, high-frequency ventilation or inverse-ratio ventilation	X	X	
	• 14.7.5 Administering pharmacologic agents: - oxygen, diuretics, bronchodilators - nitric oxide, surfactant, helium	X X	X +/-	X

Competency Statement	Criterion	L3	L2	L1
	14.8 The critical care nurse intervenes to promote successful weaning from ventilatory supports by ensuring adequate nutrition, pain management, rest and the alleviation of anxiety.	X	X	
	14.9 The critical care nurse intervenes to correct alterations in cardiac output by:			
	• 14.9.1 Manipulating preload/afterload (e.g. fluids, pharmacologic agents)	X	X	X
	• 14.9.2 Manipulating contractility			
	- fluids, pharmacologic agents	X	X	X
	- intra-aortic balloon pump	X	X	
	• 14.9.3 Manipulating heart rate or rhythm (e.g. fluids, pharmacologic agents, assisting with pacing, cardioversion and defibrillation)	X	X	+/-
	• 14.9.4 Troubleshooting invasive hemodynamic parameters	X	X	
	• 14.9.5 Participating in the management of a cardiac arrest (e.g. PALS, ACLS, protocols, administration of drugs)	X	X	X
	• 14.9.6 Assisting with the insertion of invasive hemodynamic monitoring catheters (e.g. set up, leveling, patency)	X	X	
	• 14.9.7 Initiating and managing fluid therapy	X	X	X
	14.10 The critical care nurse intervenes to correct alterations in tissue perfusion (cardiopulmonary) by administering pharmacologic agents:			
	• Oxygen, vasodilators, anticoagulants, extra corporal membrane oxygenation	X	X	X
	• Vasodilators, vasopressors, thrombolytic agents	X	X	X
	4.11 The critical care nurse intervenes to correct alterations in renal perfusion by:			
	• 7.11.1 Administering and managing fluids (e.g. calculating total fluid intake/output)	X	X	X
	• 7.11.2 Administering pharmacologic agents (e.g. diuretics, vasodilators)	X	X	X
	• 7.11.3 Maintaining invasive interventions			
	- ureteral stents, intermittent renal replacement	X	X	
	- continuous renal replacement therapies	X		
	• 7.11.4 Recognizing and minimizing the side effects of nephrotoxic pharmacologic agents (e.g. aminoglycosides, diuretics, vasopressors, radiographic dye)	X	X	+/-

Competency Statement	Criterion	L3	L2	L1
	14.12 The critical care nurse intervenes to correct alterations in cerebral perfusion by:			
	• 14.12.1 Using techniques to prevent obstruction and promote venous and cerebral spinal fluid drainage (e.g. elevate head of bed, positioning, techniques to minimize elevation of intrathoracic pressure)	X	X	X
	• 14.12.2 Manipulating PaCO2 - using a bag-valve apparatus - mechanical ventilation	X X	X X	X X
	• 14.12.3 Minimizing stimulation	X	X	X
	• 14.12.4 Administering pharmacologic agents (e.g. oxygen, anticonvulsants, diuretics, barbiturates, calcium channel blockers, sedatives, steroids, hyperosmolar therapy)	X	X	X
	• 14.12.5 Manipulating cerebral perfusion pressures (e.g. pharmacologic agents, fluids, PaCO2 control)	X X	X X	X
	• 14.12.6 Managing seizure activity	X	+/-	
	• 14.12 7 Assisting with insertion/maintenance of intracranial pressure monitoring or ventricular drainage devices (e.g. set up, drainage, positioning)	X	+/-	
	• 14.12.8 Assisting with insertion or cerebral oxygenation monitoring devices	X X	+/- X	X
	• 14.12.9 Troubleshooting invasive intracranial parameters/waveforms	X	X	X
	• 14.12.10 Using techniques that minimize elevations in intrathoracic pressures (e.g. gastric drainage, pharmacologic agents, minimizing airway stimulation)	X	X	X
	• 14.12.11 Administering fluid therapy (e.g. intracranial hypertension, hypervolemia, hypovolemia)	X	X	X
	• 14.12.12 Controlling metabolic rate (e.g. invasive and non-invasive warming/cooling devices or fluids, pharmacologic agents, minimizing stimulation)	X	X	X
	• 14.12.13 Preventing secondary injury (e.g. oxygen therapy, fluid management, blood pressure management, neuromuscular blockade)	X	+/-	

Competency Statement	Criterion	L3	L2	L1
	14.13 The critical care nurse intervenes to correct alterations in gastrointestinal perfusion and gastrointestinal functions by:			
	• 14.13.1 Managing gastric bleeding (e.g. pharmacologic agents, gastric tubes, lavage)	X	X	X
	• 14.13.2 Managing overdose (e.g. pharmacologic agents, gastric lavage, fluid administration)	X	X	X
	• 14.13.3 Maintaining gastric drainage	X	X	X
	• 14.13.4 Promoting early and safe enteral feeding	X	X	X
	• 14.13.5 Promoting early and safe parenteral nutrition if enteral feeding cannot be initiated	X	X	X
	14.14 The critical care nurse intervenes in ineffective thermoregulation by promoting normothermia eg:			
	• Using invasive cooling devices	X	X	
	• Using non-invasive warming/cooling devices or fluids/ pharmacological agents	X	X	X
	14.15 The critical care nurse promotes optimal comfort by:			
	• 14.15.1 Organizing care to optimize comfort (e.g. timing, grouping and sequencing of activities)	X	X	X
	• 14.15.2 Selecting, organizing, and administering pharmacologic agents (e.g. analgesics, sedatives, regional blocks, epidural anesthetics/analgesia, patient controlled analgesia)	X	X	X
	• 14.15.3 Implementing and evaluating individualized pain management regimen (e.g. communication, appropriate use of touch, noise control, music therapy, visualization, relaxation teckniques, use of personal momentos, family member presence)	X	X	X
	14.16 The critical care nurse intervenes to prevent complications of immobility (e.g. range of motion, turning and positioning, deep breathing and coughing, sequential compression device, therapeutic surfaces, skin risk assessment)	X	X	X
	14.17 The critical care nurse minimizes/prevents motor and/or sensory deficits by:			
	• 7.20.1 Maintaining spinal cord integrity (e.g. positioning, immobilization devices, pharmacologic agents)	X	X	X
	• 7.20.2 Intervening for spinal cord crisis (e.g. spinal shock, autonomic dysreflexia)	X	X	X
Outcome Standard 15 The critical care nurse evaluates patient outcomes in accordance with a conception model for critical care nursing and consistent with independent and interdependent nursing functions.	15.1 The critical care nurse documents all medications and treatments administered, recognizing the importance of timely entries.	X	X	X
	15.2 The critical care nurse evaluates the patient/family's response to interventions.	X	X	X
	15.3 The critical care nurse compares collected data with expected outcomes.	X	X	X

Competency Statement	Criterion	L3	L2	L1
	15.4 The critical care nurse analyzes gaps between actual and expected outcomes.	X	X	X
	15.5 The critical care nurse rapidly revises the plan of care with the patient/family and/or health care team members and implements alternatives.	X	X	X
	15.6 The critical care nurse continues to evaluate the revised plan of care.	X	X	X
	15.7 The critical care nurse participates in quality improvement activities (e.g. system effectiveness, patient/family outcomes)	X	X	X

REFERENCES

Canadian Association of Critical Care Nurses. (2004). *Standards for Critical Care Nursing Practice.*

College of Nurses of Ontario. (2002). *The Compendium of Standards of Practice for Nurses in Ontario*. Retrieved January 2006, from http://www.cno.org/pubs/compendium.html.

College of Nurses of Ontario. (2003). *Competency Review Tool*. Retrieved January 2006, from http://www.cno.org/docs/qa/44028_CRT.pdf.