COMPETENCY AND CARE OUTCOMES OF CLINICAL NURSE SPECIALISTS FOR PATIENTS WHO ARE CRITICALLY ILL: A LITERATURE ANALYSIS

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COMPETENCY AND CARE OUTCOMES OF CLINICAL NURSE SPECIALISTS FOR PATIENTS WHO ARE CRITICALLY ILL: A LITERATURE ANALYSIS

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ABSTRACT

This literature analysis investigated the competency of clinical nurse specialists (CNS) and their care outcomes for critically ill patients. The study was conducted systematically and was based on the procedure demonstrated by Whittemore & Knafl (2005). 46 evidence-based articles, including 24 research and 22 non-research articles were used to analyze the competency of CNS for critically ill patients. Competencies were subdivided into 1) nursing standard competency and 2) professional competency.

The first competency was divided into further subdomains regarding areas of expertise in clinical nursing practice. The latter is composed of quality of care, clinical and professional leadership skills, mentoring skills, ability in collaboration, collegiality, ethical-decision making, research inquiry, resource utilization and management networking, interpersonal communication skills, critical thinking, clinical decision-making, and information technology for healthcare. CNS have to develop both competencies continuously to enhance excellence in clinical practice, which subsequently leads to optimal care outcomes. In addition, the care outcomes of CNS have been well-documented, for example decreases in mortality rate, and patient complications, length and cost of stay, increases in satisfaction, and functional outcome, patient safety, team collaboration, healthy environment, and development of staff potential.

The result from this study can be used to established strategic planning for CNS preparation, and develop a CNS competency and performance evaluating system, including self-development, ratio of skill mixed care team and educational model development.

KEYWORD: COMPETENCY/ CLINICAL NURSE SPECIALIST/ CRITICAL CARE/ CRITICALLY ILL/ CARE OUTCOME

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สมรรถนะและผลลัพธ์การดูแลรักษาพยาบาลของผู้เชี่ยวชาญทางการพยาบาลเพื่อการดูแลผู้ป่วยวิกฤต: การวิเคราะห์วรรณกรรม (COMPETENCY AND CARE OUTCOMES OF CLINICAL NURSE SPECIALISTS FOR PATIENTS WHO ARE CRITICALLY ILL: A LITERATURE ANALYSIS)

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บทคัดย่อ

การวิเคราะห์วรรณกรรมนี้มีวัตถุประสงค์เพื่อรวบรวมสมรรถนะพยาบาลผู้เชี่ยวชาญทางการพยาบาลและผลลัพธ์การดูแลรักษาพยาบาลในการดูแลผู้ป่วยภาวะวิกฤต การศึกษาใช้กระบวนการทบทวนอย่างเป็นระบบของ Whittemore & Knafl (2005). 46 หลักฐานเชิงประจักษ์นำมาทบทวนวิเคราะห์ เป็นงานวิจัย 24 เรื่อง ไม่ใช่งานวิจัย 22 เรื่อง พบว่า สมรรถนะผู้เชี่ยวชาญทางการพยาบาลผู้ป่วยวิกฤต ประกอบด้วย 2 สมรรถนะหลักคือ สมรรถนะมาตรฐานทางการพยาบาล และสมรรถนะเชิงวิชาชีพ สมรรถนะมาตรฐานทางการพยาบาลยังแบ่งตามการปฏิบัติทางคลินิกที่แตกต่างกันในแต่ละความเชี่ยวชาญ สมรรถนะเชิงวิชาชีพ ประกอบด้วย คุณภาพการดูแล ทักษะการเป็นผู้นำทางคลินิกและทางวิชาชีพ ทักษะการสอน แนะนำ ความสามารถในการประสานความร่วมมือ การตัดสินใจเชิงจริยธรรม ด้านงานวิจัย การจัดการและการใช้ทรัพยากร ด้านเครือข่าย ทักษะการติดต่อสื่อสาร ความคิดวิเคราะห์และคิดสร้างสรรค์ การตัดสินใจทางคลินิก และเทคโลยีสารสนเทศทางสุขภาพ ผู้เชี่ยวชาญจำเป็นต้องพัฒนาสมรรถนะทั้งสองอย่างนี้อย่างต่อเนื่อง จะทำให้เกิดการปฏิบัติที่ดีเลิศซึ่งส่งผลต่อผลลัพธ์การดูแลรักษาสูงสุด ในด้านผลลัพธ์การดูแลรักษาพยาบาลสำหรับผู้เชี่ยวชาญทางการพยาบาลได้แก่ ลดอัตราการตาย ภาวะแทรกซ้อน ระยะวันนอน ค่าใช้จ่าย รวมทั้งเพิ่มความพึงพอใจ ผลลัพธ์ในการทำงานทางกายภาพ ความปลอดภัย ความร่วมมือของทีมดูแลรักษา สร้างบรรยากาศที่ดีในการทำงาน และการพัฒนาศักยภาพทีมผู้ให้บริการ

การศึกษาครั้งนี้สามารถนำไปเป็นแนวทางในการวางแผนกลยุทธ์เพื่อเตรียมผู้เชี่ยวชาญทางพยาบาล พัฒนาระบบการประเมินสมรรถนะและผลลัพธ์การปฏิบัติงาน ความก้าวหน้าทางวิชาชีพ การพัฒนาตนเอง การกำหนดสัดส่วนทีมการดูแลที่มีศักยภาพระดับต่างๆ และ พัฒนารูปแบบการศึกษา

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INTRODUCTION

1.1 Background and Significance of the study

Critically ill patients are defined as those patients who are rapidly pathophysiology response, at high risk for actual or potential life-threatening health problems. The more critically ill the patient is, the more likely he or she is to be highly vulnerable, unstable and complex, thereby requiring intense, closed monitoring, holistic and vigilant care. In order to patients' lives or organs save and survive without complications or disabilities is time-constraint and being crucial for their survivals under the life-threatening situation.

1. The Characteristics of critically ill patient

The characteristics of critically ill patients that investigator who is working as critical care nurse at trauma intensive care unit, Siriraj Hospital found that most of injures causes, sudden and unplanned, are traffic accident, body assault, and accident from working, etc. They present injury of important multi system, multiple injuries lead to bleeding, failure of homeostasis. The shock state occurred, which hemodynamic manifestations of cellular metabolic insufficiency, resulting from either inadequate cellular perfusion, a biochemical inability to properly utilize oxygen and others nutrients, or an inappropriate or amplified stimulation of cellular signaling cascades. A state of hyperinflammation, hypopurfusion, and hypermetabolism may influence severity to critically ill. The decreased of utilization of oxygen by the tissues. Prolonged deficits in oxygen utilization lead to tissue injury related to acid-base imbalance and severe inflammatory response syndrome (SIRS) and most consequence with severe sepsis and multiple organ dysfunction syndromes (MODs), which may progress to multiple function organ failure (MOF), if left unchecked, death (Vary., Mclean., &Vonrueden. p.173). In The United State, This is a relevant the inident of MODs in critically ill 750,000 / year, caused of 250,000 death, and mortality rate was 28-50% (Klienpell, 2006 p.267). It is the high acuity, more

complexicity and potential life-threatening situation in every minute for critically ill patients.

In other population severe traumatic brain injury has many health problems in critical care. In 2003-2005, there is traumatic brain injury provide care at trauma intensive care unit, Siriraj hospital, about 34-36%, 1-2 rank top 5 of injury. Brain injury is the combination of neuronal damage, vascular insufficiency, and inflammatory effects. Permanent destruction of the neuronal results. Ischemia, these secondary injuries are caused by decreased cerebral perfusion, resulting in brain swelling, increase intracranial pressure when more seriously to cell death, including rebleeding and infection. Outcome after traumatic brain injury is variable but can be predicted to some extent base on the type lesion, severity of injury, and length of coma (Swearingen & Keen. 2001 p.118). They required ventilator, advanced invasive monitoring technology and prone to get more complications that increase length of stay in ICU / hospital, cost of care, mostly of them were left disability. Interesting trend in past 4-5 years of this population is more elderly, trauma patients are often young, because of the population‘s longer lifespan. The elderly is an increasing problem in according to his/her comorbidity or aging, injuries of relatively low severity in the elderly population have a significantly higher probability of resulting in death (Atwell, 2002 p.772), so more advanced, comprehensive and intention to provide care is concern.

2. The Health care needs for patient with critically ill

2.1 Critically ill patient who was intensive care provision is challenge and costly. Escalating biomedical, technological and therapeutic advanced, with associated rising cost. Coupled with increased acuity and consumer expectation.
Situation analysis was found:-

2.1.1 Communication between each specialty team and specialist is mostly form chart report so delay assessments in patient’s problem can occur. In critically ill, the dynamic, rapid, severity response was always happened.

2.1.2 There is much level of care providers, from novice to expert, clinical judgments and problem solving related to their experiences and sensitivity to the problems that may be delay to coordinate, consult and collaborate with other care providers.

2.1.3 Interdisciplinary and intradisciplinay team conferences for risk management or concentration, when medical errors occurred, were not so strong.

2.2 Medical resource utilization includes services, drugs, apparatus, and technology. Situation analysis was found; there is conflict between health care providers according to the difference of professional language and new knowledge, the medicals has very rapidly changeable, progression, new advanced knowledge and high technology curing that effect to care outcomes.

2.3 Standard and Quality of care.

Situation analysis was found: The policy to improve quality and standard of care as nurse shortage related to inappropriate nurse-patient ratios. As well as to be the University of Educational medical Center in according to training physician cure variation who came from difference places.

3. The competency of health care providers

The characteristics and health care needs for patient with critically ill and situation analysis as mention included the concept of health care competition consequence to need competent care providers.

3.1 Physician who has clinical knowledge, expertise and skills clinical judgments, good communication and team relationship approach to provide care in critically ill patients.

3.2 Nurse

1) Staff nurse in critical care /intensive care unit who was expertise and skill to care patient in critically ill as well as used the technology apparatus.

2) Clinical nurse specialist / Advanced practice nurse who has intensive knowledge of pathophysiology that of high acuity and complex of illness body response, to clinical judgments based on the research /evidence-based practices included advanced technology skills, and integrate to provide care for actual or potential life-threatening health problems, closed monitoring, save and survive without complications or disabilities is time-constraint, aiming to sustained quality of life with holistic and vigilant care.

Hamric (2005) said that the role competency of clinical nurse specialist / advanced practice nurse have to be as follow:

1) Direct clinical practice

2) Consultation

3) Expert coaching and guidance

4) Research

5) Clinical and professional leadership

6) Collaboration

7) Ethical decision making

The mention as above the opportunity for development and improvement compose of many factors, related to infrastructure, mechanism context and situation. e.g. 1) resource utilization and management: appropriate workforce, ratio of skill mix team competent of care team providers, appropriate advanced high technology in accurate monitoring/ provide care. 2) Working environment; team building and team learning are the important process to develop intelligence, ability and competency of team member (Kedsara Rugchat, 2006). Building mutual trust and understanding team is promoted through the partnering organization. The member would be challenge and learning from the critical situation but in unhealthy environment increased more stress and conflicts that led to unsatisfied in job (Disch J.,Walton, M., and Barensteiner, J. 2001),definitely, decreasing the care outcomes. 3) The competency of care providers ,especially, clinical nurse specialist / advanced practice nurse, as clinical leadership to provide direct care, coordinate and collaborate multidisciplinary team to innovate /create health care system. Promote, develop the competency of health care providers and empower team to create learning organization and then lead to health care system and professional development

4. The Care outcomes of clinical nurse specialist practices have impact to all 3 dimensions as follow:

4.1 Patient /client dimension.

Patient/client provide continuum of care, access and decision to provide care, safety, reduced complication, good quality of life, satisfaction etc.

4.2 Organization dimension

The Organization has standard and quality assurance of care from continuous quality improvement and resource utilization. The performances and outcomes were accepted world wide and expand to international. Networkings occur

to collaborate in many aspects of development, knowledge, personal, technology and organization.

4.3 Personnel / care provider dimension

The care providers competency is continuous develop and improve, which able to effective in care provider. Increasing quality of care, which were trust and respect between interdisciplinary and intradisciplinary, guiding to professional development and expanding the scope of care. Job's satisfaction was occurred that mean workforce retention.

The important things to be concern that if the care outcomes were not purposed. Clinical nurse specialist should be root cause, situation, and impact analysis to improvement.

The Situation of care outcomes in clinical nurse specialist/ advanced practice nurse practice for patient with critically ill in United State and Thailand.

In The United State of America, The evolution of clinical nurse practitioner / advanced practice nurse came from 1960s was developed many models in each era until the 21st century. Especially the rebuilding of the public health system received increased attention after September 11, 2001, attacks on the World Trade Center in The New York City. Today, America is faced with a health care system at risk of imploding with spiraling costs and increasing percentages of population that are uninsured or underinsured. Along with a downturn in the national economy, an increasing diverse and aging population, military conflicts in Afghanistan and Iraq, and a critical nursing shortage, the health care system faced significant problem that must be addressed. This is an opportunity and challenge of clinical nurse specialist / advance practice nurse to demonstrate competency and care outcomes of practices (Hamric. 2005). Many researches, presented, were published in the medical/ nursing journal e.g. In the American Journal of critical 2003 vol. 12, The study of comparison via work sampling analysis of an acute care nurse practitioner and physician in training for management of patients in the intensive care unit was presented that care outcomes, shorten length of stay, reduced complication, increasing relationship 'team care etc., in acute care nurse practitioner was better than physician.

In Thailand, The study of clinical nurse specialist/ advanced practice nurse outcome evaluation for patient with critically ill in few scale. This is the issue that will

be consideration, more concerned and monitor.

1.2 Main Issues

Critically ill patient who was high acuity, complexity, comprehensive, intensive, multidisciplinary, advanced in therapeutic and technology, with associated expertise also rising cost, to meet health care needs including consumer expectation is challenge. Investigator intends to find out the competency of clinical nurse specialist for patients who are critically ill as well as care outcomes from practice which is reflecting and discovering competencies of clinical nurse specialist by reviewing and conducting the detail analysis. This is a direction to develop and improve competency of clinical nurse specialist and care outcomes for critically ill patients.

1.3 Purposes of the Study

1) To analyze the competency of clinical nurse specialist for patients who are critically ill.

2) To analyze the care outcomes of clinical nurse specialist for patients who are critically ill.

1.4 Expected Benefits / Outcomes

1) To know the competency of clinical nurse specialist affect to good care outcomes for patient with critically ill.

2) To learn factors and barriers that used to guide competency of clinical nurse specialist for patient with critically ill development strategy planning

3) To direct and demonstrate competency and performance evaluation system, clinical specialist nurse/ patient ratio, career path, succession plan, appropriately in each context and relevant of Thai nursing council.

4) To improve quality of care outcomes in all dimensions, patient, nursing, and organization.

CHAPTER II
METHOD

This study was a review and analyzes all level and widely-acceptable literature concerning the competency of clinical nurse specialist and the care outcomes of clinical nurse specialist practice with critically ill patients in health care delivery service or system. The result of this study shall be guide to develop the competency both of entry-level and competent clinical nurse specialist that provides good care outcomes in changeable current situations. The study was conducted by way of literature review, which meant that all past experience, incidents and related theories would be reviewed and complied to have better understanding about health phenomena and problems. This would lead to the nursing quality development and improvement. (Whittemore and Knafl, 2005). The study consisted of the following steps:

1) Problem Identification
2) Literature search
3) Data evaluation
4) Data analysis
5) Presentation

More information about each step was as follows:

2.1 Problem identification

Problem identification from working experience and related literature review, which were analyzed to find out the resolution direction or guideline that was relevant to problems.

2.1.1 Problems derived from working experience (situation analysis)

Clinical nurse specialist / advanced practice nurse has been developed by International council and midwifery of Thailand for 5 years, however, the role

competency and the outcome are not well developed. The message about why do we have to has clinical nurse specialist/advanced practice nurse in critical care do not a clear answer yet. A lot of arguments, nurse who working for critical care patients more a less had better competency than who had clinical nurse specialist/advanced practice nurse certificated. At present very few certified clinical nurse specialist/ advanced practice nurse in critical care demonstrate their outcomes that clearly satisfied to stakeholders, client, provider, and administrator. The outcomes are in a blurred state.

2.1.2 Problems derived from literature

According to the literature review, so little scale, there is only few researches and literature in Thailand, It was found, from the conference proceeding on 14-15 February 2008 at Thai nursing council, which the outcome of clinical nurse specialist in developing research mostly presented in clinical practice guidelines, these guidelines not clearly demonstrated recognition of the team. None of these clinical nurse specialists / advanced practice nurse developed multidisciplinary practice guideline. There is only one outcome research of critical care clinical nurse specialist development multidisciplinary practice guideline with the present of better outcome the weaning patient in critical care (Wasee, 2006). To review outcomes of clinical nurse specialist/advances practice nurse in western country could be a guide for critical care clinical nurse specialist in Thailand to develop their practice outcomes that reflecting clinical nurse specialist competency.

From the working experience and literature review, they led to a conclusion that the role competency of clinical nurse specialist affected the care outcomes for critically ill patient. To reviews lesson learn, situation, from the literature in country and others, each duration of time, each context including all aspects situation assessment and analysis shall be guide to develop the competency of clinical nurse specialist and care outcome of clinical nurse specialist practice for critically ill patients so clearly.

2.2 Literature search

This was done by focusing on working experience, fixing up keywords in searching from database, recording the search, and checking the possibilities and

relevance to identified problems before selecting some example studies for this research.

2.2.1 Scope of literature

The literature review in this study comprised of many academic documents, e.g. published researches, articles, opinions of experts, the authority or policy statement from nursing organizations, manuals, textbooks, and literature searched from Mahidol University library, electronic database, and web-based from unlimited-2007.The scope of literature covered the following issues:

1) Literature relating to advanced practice nurse.
2) Literature relating to competency of advanced practice nurse and clinical nurse specialist.
3) Literature relating to care outcomes in critically ill patients.
4) Literature relating to care needs in critically ill patients.
5) Literature relating to communication.

2.2.2 Keywords in this search included:

1) Clinical nurse specialist
2) Clinical nurse specialist and intensive care unit.
3) Clinical nurse specialist and critical care.
4) Clinical nurse specialist and care outcomes.
5) Acute nurse practitioner and critical care and care outcomes.
6) Competency and medical personal and critical care.
7) Competency and clinical nurse specialist
8) Intensive care unit and staff and successful
9) Traumatic critically ill
10) Teamwork and critically ill.

2.2.3 The database of this search included:

1) Database searching
   - CINAHL
   - Ovid
   - Science Direct
   - Blackwell Synergy
   - EBSCO HOST

- Elsevier
- www.aacn.org
- www.nacns.org
- www.google.scholar.com
- www.medscape.com
- www.caccn.ca

2) Thesis / thematic paper of Mahidol University

3) Reference list

4) Secondary data, relating criteria, that be permitted

5) Hand search

All related empirical evidences obtain from searching subject to the searching criteria were selected and finally 46 empirical evidences, 24 researches and 22 non researches, were used.

2.2.4 The quality of literature evaluation criteria

1) The empirical evidences from searches were analyzed to evaluate the quality subject to the criteria of Melnylk & Fineout-Overholt (2005)

Level I	Evidence from a systematic review or meta-analysis of all relevant RCTs or evidence-based clinical practice guideline based on systematic reviews of RCTs
Level II	Evidence obtained from at least one well- designed RCTs
Level III	Evidence obtained from well- designed controlled trials without randomization
Level IV	Evidence obtained from well- designed case-control and cohort study
Level V	Evidence from systematic reviews of descriptive and qualitative studies
Level VI	Evidence from a single descriptive or qualitative study
Level VII	Evidence from the opinion of authorities and /or reports of expert committees

2) Since there had been no level of evidences apply for some literature such as article, integrated review, and text book, so these evidence were categorized as level *

2.3 Data Evaluation

Read all the retrieved documents to evaluate if they were relevant to the objectives of study. Development of method for data evaluation: by reading and analyzing each research starting from the abstract to decide if it is appropriate for review and evaluation. Then, reading through the whole research to recheck it was done. If it related literature, it will be read carefully to evaluate the possibility of intervention for further implementations.

2.4 Data Analysis

2.4.1 Extracted the data from each document by using the table as proposed in Appendix A, B

2.4.2 Extracted the data from each document according to the objectives of the study

2.4.3 Summarized all extracted data according to the objectives of the study.

2.4.4 Analysis the empirical evidences and seek for advise from advisor.

2.5 Presentation

In order to demonstrate the finding of literature analysis, developed patterns were presented and synthesized for the understanding; the presentation was gathered in this following manner.

2.5.1 Table presentation

1). Table analyzing general characteristics of evidences based.

2). Table analyzing related critical care clinical nurse's competency from the organizations.

3). Table analyzing related the comparison competency of clinical nurse specialist from the organizations.

4). Table analyzing related research.

5). Table analyzing related non-research.

2.5.2 Description of contents categorized by established objectives.

1). To analyze the competency of clinical nurse specialist in critically ill patients.

2). To analyze the care outcomes of clinical nurse specialist in critically ill patients.

CHAPTER III
CRITICAL ANALYSIS AND SYNTHESIS

This literature analysis covered the competency of clinical nurse specialists (CNS) and care outcomes of the clinical nurse specialists which performs for patients who are critically ill in delivery health care system. The competency of clinical nurse specialist has a substantial impact on the practice setting, spheres of influence is that patient/clients, nurse/nurse practice, and organization/system. The literature review was conducted systematically and was based on the process of Whittemore & Knafl (2005) by means of searching empirical evidences, both research and non-research. The empirical evidences from searches were analyzed to evaluate the quality subject to the criteria of Melnylk & Fineout-Overholt (2005). There were total 65 evidences obtained from search but, after evaluating, the investigator selected total 46 relevant evidences analyzed, synthesized and then extracted data would be concluded to obtain main point. The exclusion criteria of 19 evidences were, although related to CNS but was expansion role in continuum to home health care which was not in acute and intensive care unit, out of area of services. The analysis outcomes was used for summarizing the competency of clinical nurse specialist and care outcomes for patients in critically ill; the main issued analyzed and extracted from literature are presented in the following tables.

1. General characteristics of evidences based. (Table1)
2. The critical care clinical nurse's competency from the organizations. (Table2)
3. The comparison competency of clinical nurse specialist from the organizations. (Table3)
4. Analysis and extracted data from research. (Table 4)
5. Analysis and extracted data from non-research. (Table5)

Table1: General characteristics of evidences based studies by region, number and percentage

Characteristics	Number (%)									Total
	USA	Canada	UK	Sweden	Norway	Australia	China / HK	Korea	Thai	
1. Type of evidence	34 (73.91%)	3 (6.52%)	3 (6.52%)	1 (2.17%)	1 (2.17%)	1 (2.17%)	1 (2.17%)	-	-	46 (100%)
1.1 research	17 (36.95%)	1 (2.17%)	1 (2.17%)	1 (2.17%)	1 (2.17%)	1 (2.17%)	1 (2.17%)	-	1 (2.17%)	24 (52.17%)
1.2 Non-research	17 (36.95%)	1 (2.17%)	2 (4.34%)	-	-	-	1 (2.17%)	1 (2.17%)	-	22 (47.82%)
2. Publishing year										
2.1 before 2000	7 (15.27%)	-	1 (2.17%)	-	-	-	1 (2.17%)	-	-	9 (19.56%)
2.2 2000-2005	18 (39.73%)	2 (4.34%)	1 (2.17%)	-	-	1 (2.17%)	1 (2.17%)	1 (2.17%)	-	24 (52.17%)
2.3 after 2005	9 (19.56%)	-	-	1 (2.17%)	1 (2.17%)	1 (2.17%)	-	-	1 (2.17%)	13 (28.26%)

General characteristics of evidences from researching consist of type of evidences and publishing year. The evidences had been discovered as Non-research for 47.82 %, following by Research for 52.17 %. Research was being published mostly in United State of America (U.S.A) 36.95 %, and the rest came from Canada, United Kingdom (UK), Sweden, Australia, China, and Thai equally 2.17%. Non-research evidences of 42.8% were mostly published in USA 36.95%, following by UK 4.34% and the rest came from Canada, Hong Kong (HK), and Korea as equally 2.17%.These articles were published mostly in the year 2000-2005 as much as 52.17%, mostly in USA had 18 from total 24 articles. As same as Evidences were published after the year 2005 in U.S.A 19.56%, 9 from total 13 articles and before the year 2000 in U.S.A 15.27%, 7 from total 9 articles. All of evidences were by individuals and the organizations as diagram search (Appendix C).

Table2: CCCNS Competency from the organization

1. AACCN (The American Association of Critical Care Nurse)

From Standards of Practice and Performance for the Acute and Critical care CNS, 2004

Scope of Practice/Competency	Performance Indicator
I. Standards of Practice 1.Assessment The Acute and critical care CNS collects data relevant to 3 spheres of influence: the patient and family members, nursing personal, and organizational systems	1. Develops and uses data collection tools that have been established as reliable and valid. 2. Includes the patients, family members, and other healthcare providers in the data collection process to develop a holistic picture of the patient's needs. 3. Obtains data from multiple sourced that reflect sensitivity to ethnic and cultural differences of individuals (patient, family members, nursing personal, and system) 4. Collects data on an ongoing basis that reflects the dynamic nature of patients and systems. 5. Collects data in all 3 spheres and prioritizes according to immediate condition and needs. 6. Identified factors that influence outcomes during the data collection process (e.g. financial and regulatory requirement, and effectiveness of interdisciplinary collaboration) and classifies them as facilitators or barriers to proposed changes. 7. Synthesizes the data and documents in a retrievable form. 8. Uses and designs appropriate tools and methodologies to identify the clinical and professional development needs or gaps in knowledge, skills, and competencies of nursing personnel.
2.Diagnosis The acute and critical care CNS analyzes the assessment data to determine the needs of patients, family members, nursing personnel, and organizational systems.	1. Formulates differential diagnosis by systematically comparing and contrasting assessment findings. 2. Derived diagnosis from the assessment data. 3. Discusses, validates, and prioritizes diagnosis in collaboration with patients, family members, nursing personnel, and systems. 4. Prioritizes and documents diagnoses to facilitate development of a plan of care and to achieve expected outcomes. 5. Reevaluates and revises diagnosis when additional assessment data become available. 6. Identifies and analyzes factors that enhance or hinder the achievement of desired outcomes for patients, family members, nursing personnel, and systems.

Table2: CCCNS Competency from the organization (Continued)

Scope of Practice/Competency	Performance Indicator
I. Standards of Practice (cont.) 3. Outcome Identification The acute and critical care CNS identifies expected outcomes for patients, family members, nursing personnel, and organizational systems.	1. Formulates expected outcomes with patients, family members, and the multidisciplinary healthcare team that are based on current clinical and scientific knowledge. 2. Identifies expected outcomes by considering associated risks, benefits, and costs. 3. Modified expected outcomes and plan of care or actions based on changes in condition or needs.
4. Planning The acute and critical care CNS develops and facilitates a plan that prescribes interventions to attain the expected outcomes for patients, family members, nursing personnel, and organizational systems.	1. Develops a plan that is individualized, dynamic, and can be applied across the continuum of acute and critical care services. 2. Develops the plan in a collaboration manner, promoting each individual's contributions toward achieving the expected outcomes. 3. Identifies interventions within the plan of care that reflect current scientific knowledge and Practice and promote continuing of care. 4. Documents the plan in a format easily accessible to and understandable by, all team members involved.
5.Implementation The acute and critical care CNS effectively implements the interventions identified in the plan(s) for patients/family, nursing personnel, and organizational systems.	1. Prescribes, orders, and/or implements pharmacologic and nonpharmacologic interventions, treatments, and procedures for patient and family members, as identified in the plan of care, within the framework of state licensure and hospital privileges. 2. Performs evidenced-based interventions consistent with the needs of the patient and family. 3. Delivers interventions in a safe and ethical manner that promotes health and stability and that minimizes complications. 4. Documents interventions in a manner that is appropriate, retrievable, and effective, as well as facilitates patient care, quality improvement, and administrative initiatives. 5. Promotes implementation of the plan of care collaboratively with patients, family members and the healthcare team.

Table2: CCCNS Competency from the organization (Continued)

Scope of Practice/Competency	Performance Indicator
I. Standards of Practice (cont.) 6. Evaluation The acute and critical care CNS evaluates progress toward attainment of expected outcomes for patients, family members, nursing personnel, and organizational systems.	1. Performs evaluation in a systematic and ongoing manner. 2. Bases the evaluation process on the analysis of risks, benefits, and cost effectiveness. 3. Includes interdisciplinary collaboration and multiple sources of data in the evaluation process. 4. Bases the evaluation process on advanced knowledge, practice, and research. 5. Documents the evaluation process in an appropriate, retrievable, and effective manner. 6. Revises the diagnoses, expected outcomes, and plan of care based on information gained in the evaluation process. 7. Establishes, monitors and evaluates the effect of interventions on patient care, organizational and nursing personnel outcomes, and cost. 8. Incorporates the use of quality indicators and benchmarking in evaluating progress of patients, family members, nursing personnel, and systems toward expected outcomes.
II. Standard of professional performance 1. Quality of care The acute and critical care CNS systematically develops criteria for and evaluates the quality of nursing practice and organizational systems.	1. Assumes the leadership role in establishing criteria for and monitoring quality of care initiatives within the 3 spheres of influence. 2. Assesses the need for, plans, and implements quality improvement programs. 3. Evaluates quality improvement data and formulates evidence-based recommendations to improve quality of care and nursing practice. 4. Participates in interdisciplinary efforts to address costs, duplication, and barriers to goal attainment.
2. Individual practice evaluation The acute and critical care CNS evaluates his or her practice in relation to professional practice standards and relevant regulations.	1. Evaluates own clinical and professional performance according to the standards of appropriate professional and regulatory bodies. And takes action to improve practice. 2. Assists in the development and evaluation of criteria for evaluation of CNS practice within the 3 spheres. 3. Seeks feedback regarding own practice and role performance from peers, professional colleagues, patients and their family members, and others.

Table2: CCCNS Competency from the organization (Continued)

Scope of Practice/Competency	Performance Indicator
II. Standard of professional performance	
2. Individual practice evaluation (cont.)	4. Participates in interdisciplinary efforts to address costs, duplication, and barriers to goal attainment.
3. Education The acute and critical care CNS acquires and maintains current knowledge and competency in the 3 spheres of influence in acute and critical care nursing.	1. Proactively seeks and participates in experiences and learning opportunities that will advance his or her knowledge of interventions, therapeutics. And clinical skills on a regular basis. 2. Pursues and participates in formal and independent learning activities to enhance skills in Promoting the professional development of nursing practice personnel. 3. Pursues and participates in educational and mentoring opportunities to increase effectiveness as a change agent. 4. Pursues and participates in formal and independent learning activities to enhance skills in proactive problem solving for system issues.
4. Collegiality The acute and critical care CNS contributes to the professional development of peers, colleagues and others.	1. Identifies and participates in opportunities to share skills, knowledge, and strategies for patient care and system improvement with colleagues and other healthcare providers. 2. Promotes a learning environment that enables nursing and other healthcare personnel to make optimal contributions and systems to function most effectively. 3. Participates in professional organizations to address issues of concern in meeting patient's needs and improving nursing practice and system effectiveness.
5. Ethics The acute and critical care CNS's decisions and actions are made on behalf of patients and their family members, nursing personnel, and organizational systems and are determined in ethical manner.	1. Fosters the establishment of an ethical environment that supports the rights of all participants 2. Contributes to the resolution of ethical dilemmas by enhancing the responsiveness of individuals as well as organizational systems. 3. Serves as a mentor and role model by participating in the resolution of ethical and clinical dilemmas.

Table2: CCCNS Competency from the organization (Continued)

Scope of Practice/Competency	Performance Indicator
II. Standard of professional performance (cont.) 6. Collaboration The acute and critical care CNS collaborates with patients and their family members and healthcare personnel in creating a healing and caring environment.	1. Provides consultation and initiates referrals to facilitate optimal care. 2. Optimizes the collaboration and coordination of the interdisciplinary team to enhance the environment of patient care. 3. Provides mentoring to nursing students, specifically in the area of critical care and CNS preparation in collaboration with school of nursing. 4. Collaborates with other disciplines in teaching, consultation, management, and research activities to improve outcomes in nursing practice and enhance the healthcare environment.
7. Research The acute and critical care CNS utilizes, participates in, and disseminates research to enhance practice	1. Critically evaluates existing practice based on current research findings and integrates changes into practice. 2. Chooses, applies, or withholds interventions in a manner that is substantiated by relevant research and appropriate to the needs of the patient or system. 3. Utilizes the research process to improve patient outcomes and enhance the environment of care. 4. Collaborates with senior investigators and/or members of the interdisciplinary team in conducting research relevant to practice.
8. Resource utilization The acute and critical care CNS influences resource utilization in order to promote safety, effectiveness, and fiscal accountability in the planning and delivery of patient care.	1. Evaluates factors related to safety, effectiveness, availability, and cost to design and implement best practices. 2. Advocates for patients and their family members and nursing personnel, and supports policy and services that advocate for patient rights and optimal environments of healthcare. 3. Facilitates access for patients and their family members to appropriate healthcare services. 4. Serves as a resource to various populations for the purpose of influencing the delivery of healthcare and the formation of policy.

Table2: CCCNS Competency from the organization (Continued)

2. **Board of Registered Nursing (BRN) A State of California Department of Consumer Affairs**
Certification of clinical nurse specialist, 1999

Five component areas of competency for Clinical Nurse Specialists. In order to be eligible to be certified as a CNS in the state of California, An RN must have completed. There are five major components of the CNS role. Activities within these role components may include the following:

Scope of Practices/ Competency	Performance Indicator
1. Expert Clinical Practice Expertise in a specialized area of nursing clinical experience and additional equip the nurse with the skill to synthesize from a board range of nursing, based on theoretical , scientific knowledge in the area of practice to achieve holistic, integrated complex, critical and comprehensive health care in partnership with the client, family members, other health care professionals and health care team members	1. Works with staff to improve clinical care. 2. Uses advanced theoretical and empirical knowledge of physiology, pathophysiology, pharmacology, and health assessment. 3. Assesses and intervenes in complex health care problems within a selected clinical specialty area and selects, uses, and/or evaluates technology, products, and devices appropriate to the specialty area of practice. 4. Manages populations of clients with disease states and non-disease based etiologies to improve and to promote health care outcomes. 5. Precepts students and mentors other nursing staff.
2.Education To acquire and maintain current knowledge and competency to patients / families and healthcare team members	1. Assists with and promotes staff development. 2. Provides formal education classes (i.e., community education and/or presentations) and informal education classes (i.e., in-services). 3. Serves as a preceptor to nursing students, new RN graduates, RNs reentering the workforce, and advanced practice RN students and RNs. 4. Mentors and coaches' staff and students.
3. Research To Utilize, participate in, and disseminate research to enhance practice	1. Uses clinical inquiry and research in an advanced specialty area of practice. 2. Uses a performance improvement model as an avenue to improve advanced clinical practice and care. 3. Stays abreast of current literature in the specialty area of practice. 4. Initiates research into topics that directly impact nursing care and uses measurement and evaluation methodologies to assess outcomes.

Table2: CCCNS Competency from the organization (Continued)

Scope of Practices/ Competency	Performance Indicator
3. Research (cont.)	5. Publishes data from research topics related to the specialty area of practice
4. Consultation To Provide expert consultation for nursing staff, other health care professional, also networking by implementing improvements in health care practice and delivery.	1. Performs consultative functions in multiple health care settings. 2. Provides clinical expertise and makes recommendations to physicians, other health care providers, insurance companies, patients, and health care organizations. 3. Reviews standards of practice to determine appropriateness and to reflect current nursing clinical practice. 4. Evaluates policy and procedures for clinical practice in a specialty area. 5. Uses evidence-based clinical practice to develop methods to improve patient care and patient care outcomes.
5. Clinical Leadership To Initiate, develop, participate in standard of practices/cares and To contribute the professional development of peers, colleagues and others.	1. Uses theory/research as a foundation for clinical leadership and CNS research based practice. 2. Demonstrates mastery in theories including Change Theory, Persuasion, Influence, and Negotiation Theory, Systems Theory, Consultation Theory, Research Theory and Research Utilization. 3. Participates in the professional development of self, others, and the nursing profession. 4. Belongs to and participates in professional organizations. 5. Serves as a change agent in health care settings by developing health care standards, assisting in the implementation of standards, facilitating goal setting and achievement and evaluating outcomes. 6. Serves in a leadership role in the community.

Table2: CCCNS Competency from the organization (Continued)
3. CACCN (Canadian Association of Critical Care Nurses)
Position Statement 2002. Copyright 2005 Canadian Association of Critical Care Nurses-created by Tracy Porchak and Kevin Wilson

Competency	Performance Indicator
There are five interrelated components of the CC-CNS roles. The components are not separate and distinct but are woven into everyday functioning of the CC-CNS role.	
1. Practitioner	In advanced critical care clinical practice, In the practice component 1.The CC-CNS is prepared to access and intervene complex, acute (actual or potential life threatening) health problems within the selected critical care clinical specialty. 2.The CC-CNS provides expert client care, based on an in-depth understanding of critical care nursing and other relevant sciences. 3.The clients will predominantly be individuals and their families in need of critical care nursing services include groups or communities.
2. Educator	1.The CC-CNS educates clients and their families. 2.The CC-CNS promotes an environment conducive to learning for staff nurses, students, and other health care professionals. 3.The CC-CNS functions as a resource person, program planner, preceptor, teacher, mentor, and client educator. 4.The CC-CNS shares research and theoretical knowledge through publication, presentations, and educational programs.
3. Consultant	1.The CC-CNS shares specialized knowledge and provides consultations to clients, nurses, other health care professionals, health care institutions, organizations and policy makers. 2.The CC-CNS consults with others both internal and external to the organization to improve client care, and to deal with complex and challenging situations faced in the critical care setting.

Table2: CCCNS Competency from the organization (Continued)

Competency	Performance Indicator
4. Researcher	1.The CC-CNS strengthens the link between clinical nursing practice and research. 2.The CC-CNS has expertise in research methodology, conducts critical care nursing research, and participates interdisciplinary critical care research and quality improvement activities. 3.The CC-CNS has particular responsibility for critically appraising research findings and implementing strategies to translate research findings and theoretical frameworks into practice to improve patient care in the critical care setting. 4.The CC-CNS encourages nurses to identify critical care nursing research questions and to participate in.
5. Leader	1.The CC-CNS promotes quality care through the development of policies, standards of care, and clinical programs and services. 2.The CC-CNS directs nursing care activities as well as plans, implements, and evaluates changes in clinical practice. 3.The CC-CNS provides clinical leadership by acting as a resource, facilitator, coordinator, role model, and advocate. 4.The CC-CNS's leadership responsibilities should enhance the clinical focus of the role.
Professional Characteristics 1. Leadership 2. Communication 3. Critical thinking 4. Clinical decision-making 5. Collaborative 6. Ethical decision- making 7. Mentoring skills	

Table2: CCCNS Competency from the organization (Continued)

4. The American Association of Colleges of Nursing Joan Stanley, Director of Education Policy Annie Alesandrini, Project Assistant Nurse Practitioner and Clinical Nurse Specialist Competencies for Older Adult Care, March 2004

Scope of Practice/ Competency	Performance Indicator
I. Patient/Client Sphere of influence CNSs a. Use their knowledge and skills to assess, diagnose, and treat illness (symptoms and functional problems) and risk behaviors in patients. b. To improve nurse sensitive outcomes for specialty c. Demonstrate knowledge, skills, and behavior in the design d. Delivery and evaluation of innovative, cost-effective, quality interventions for illness problems and risk behaviors amenable to nursing interventions.	**A. Assessment** 1. Conduct comprehensive, holistic wellness and illness assessments 2. Using known or innovative evidence-based techniques, tools, and methods to obtain data about context such as disease, culture, and age-related factors; etiologies (including both non disease and disease-related factors) necessary to formulate differential diagnoses. 3. Identify the need for new or modified assessment methods; and data on the target population prior to designing new programs. 4.Assessment of the specialty should include attention to the following special considerations specific to group. **B. Diagnosis, Planning, and Interventions** *Diagnosis and Planning* 1. Synthesize assessment data and develop differential diagnosis of illness problems. 2. Describe problems in context; 3. Select evidence-based nursing interventions to target the etiologies of illness or risk behaviors 4. Develop interventions that enhance the attainment of predicted outcomes while minimizing gun intended consequences. 5. Implement interventions that integrate unique needs of individuals, families, groups, and communities

Table2: CCCNS Competency from the organization (Continued)

Scope of Practice/ Competency	Performance Indicator
I. Patient/Client Sphere of influence (cont.)	**B. Diagnosis, Planning, and Interventions** (cont.) 6. Collaborate with multidisciplinary professionals to integrate nursing interventions into a comprehensive plan of care to enhance patient outcomes. 7. Select evidence-based nursing interventions for patients that target etiologies of illness and risk behaviors. 8. Develop interventions that enhance the attainment of predicted outcomes while minimizing unintended consequences 9. Implement interventions that integrate the unique needs of patients; collaborate with multidisciplinary professionals to integrate nursing interventions into a comprehensive plan of care to enhance patient outcomes. 10.Incorporate evidence-based research into nursing interventions within the specialty population. 11.Considered special needs in the diagnosis, planning, and interventions for the specialty population. **C. Evaluation** 1. Select, develop, and/or apply methods to evaluate outcomes of nursing interventions. 2. Evaluate effects of nursing interventions for individuals and aggregates for clinical effectiveness, patient responses, efficiency, cost-effectiveness, consumer satisfaction, and ethical considerations. 3.Collaborate with patients and other healthcare providers to monitor progress toward outcomes and making modifications as needed. 4. Evaluate the impact of nursing interventions on fiscal and human resources. 5. Document outcomes in a reportable manner. 6. Disseminate results of innovative interventions.

Table2: CCCNS Competency from the organization (Continued)

Scope of Practice/ Competency	Performance Indicator
I. Patient/Client Sphere of influence (cont.)	**C. Evaluation** (cont.) 7. Consider and ensure that clinically effective, efficient, fiscally sound, quality interventions, methods, and programs are not only available to nurses but also available as part of a continuum of knowledge development for care of specialty population.
II. Nurse and Nursing practice Sphere of Influence CNSs a. Advance nursing practice and improve nurse sensitive patient outcomes by updating and improving norms and standards of nursing care. b. Provide leadership in the development of evidence-based policies, procedures and protocols, and best practice models and guidelines. c. To improve nurse sensitive outcomes for specialty population d. Demonstrate leadership, knowledge, skills, and behavior to influence nursing practice delivered by nurses and nursing personnel. e. Mentoring, educating, and role modeling innovative nursing interventions.	**A. Assessment** 1. Use/design methods and instruments to assess patterns related to nursing practice outcomes within and across units of care. 2. To assess knowledge, skills, and practice competencies of nursing personnel to advance the practice of nursing. 3. To identify needed changes in equipment 4. To substantiate desirable and undesirable patient outcomes linked to nursing practice. 5. To identify facilitators and barriers to implementing nursing practices that influence nurse-sensitive outcomes. 6. Assist nurses and nursing personnel, and change practice norms and standards to ensure comprehensive assessment. **B. Diagnosis, Planning, and Intervention** *Diagnosis and Planning*: 1. Draw conclusions about the evidence-base and outcomes of nursing practice that requires change, enhancement, or maintenance.

Table2: CCCNS Competency from the organization (Continued)

Scope of Practice/ Competency	Performance Indicator
II. Nurse and Nursing practice Sphere of Influence (cont.)	**B. Diagnosis, Planning, and Intervention** (cont.) 2. Anticipate and plan for achieving intended - and avoiding unintended – outcomes of change, including planning for facilitators and barriers and effective resource management. *Intervention:* 3. Use evidence-based information to identify nurse-sensitive outcomes. 4. Mentor nurses and collaborate with nursing personnel to implement innovative interventions. 5. Develop education programs that target specific personnel needs to improve nursing practice and patient outcomes 6. To ensure that nurses and nursing personnel implement innovative interventions and programs of care, and that nurses have the requisite knowledge and skills to care for specialty population.(through peer education, staff development, and preceptor experiences). 7. Advocate within the health care system and policy arenas for the health needs. 8. Articulate and promote to other health care providers and the public, the role within the healthcare team, of either the NP or CNS, and its significance in improving outcomes of care. 9. Create and enhance positive, health promoting environments that maintain a climate of dignity and privacy. 10.Promote continuity of care and manage transitions across the continuum of care. 11.Communicate to other members of the interdisciplinary care team to improve outcomes of care. 12.Collaborate with the interdisciplinary and care team to improve outcomes of care. 13.Participate in the design and implementation of evidence-based protocols and

Table2: CCCNS Competency from the organization (Continued)

Scope of Practice/ Competency	Performance Indicator
II. Nurse and Nursing practice Sphere of Influence (cont.)	processes of care to reduce adverse events such as infections, falls, polypharmacy. **B. Diagnosis, Planning, and Intervention** (cont.) 14.Address the impact of ageism, sexism, and cultural biases on health care policies and systems. 15.Use public and private databases to incorporate evidence-based practices 16.Apply evidence-based practice using quality improvement methodologies in Providing quality care. 17 Educate professional and lay caregivers to provide culturally competent care. 18.Incorporate culturally and spiritually appropriate resources into the planning and delivery f health care personnel to implement changes in practice with individual patients or populations. **C. Evaluation** 1. Evaluate the ability of nurses and other nursing. 2. Evaluate the effect of change on clinical outcomes and nurse satisfaction. 3. Document outcomes and disseminate results to all stakeholders. 4. Select from among the competencies for care of specialty population to evaluate patient outcomes related to nurses and nursing personnel interventions, including team members.
III. Organization/System Sphere of Influence CNSs a. Influence the organization and system by articulating the value of nursing care at the decision-making level and act as advocates for professional nursing.	**A. Assessment** 1. Use/design system level assessment methods and instruments to identify organizational structures and functions that impact nursing practice and nurse-sensitive patient care outcomes.

Table2: CCCNS Competency from the organization (Continued)

Scope of Practice/ Competency	Performance Indicator
III. Organization/System Sphere of Influence (cont.) b. Lead nursing and multidisciplinary groups to implement innovative patient care programs that address patient needs across the full continuum of car	2. Assess system-level variables, such as culture, finances, and regulatory requirements that influence nursing practice and outcomes. 3. Monitor legislative and regulatory policies that may impact nursing practice. **B. Diagnosis, Planning and Intervention** 1. Identify facilitators and barriers to achieving desired outcomes across the continuum of care. 2. Identify variations in organizational culture that affect outcomes and plan for achieving system-wide outcomes. 3. Lead nursing and multidisciplinary groups to implement innovative patient care programs for diverse populations and contribute to the development of multidisciplinary standards of practice and evidence-based guidelines for care. 4. Develop or influence system-level policies impacting innovations and programs of care. 5. Provide leadership for policy initiatives that advance health of the public and mobilize necessary professional and public resources to support these initiatives. **C. Evaluation** 1. Use evaluation methods and instruments to identify and evaluate system-level outcomes of care. 2. Evaluate organizational policies related to support and sustainability of programs of care 3. Document and disseminate system-wide the outcomes of nursing practice. 4. Improve nurse sensitive outcomes for specialty populations. 5. Provide leadership, knowledge skills, and behavior to influence changes in healthcare organizations at the system-level to facilitate nursing practice for the improvement of quality cost-effective outcomes.

Table2: CCCNS Competency from the organization (Continued)

5. NONPF (National Organization of Nurse Practitioner Faculties), Washington, DC

Acute Care Nurse Practitioner Competencies, November 2004. Developed by the National Panel for ACNP competencies

Domain / ACNP- competency	Performance indicator
I. Health promotion, health protection, disease prevention and treatment **a. Assessment of health status** Assess and collect data of complex acute, critical, and chronically-ill patients from health status and patients/family needs	1.Assesses the complex acute, critical and chronically ill patient for urgent and emergent conditions, using physiologically and technologically derived data, to evaluate for physiologic instability and potential life-threatening conditions. 2.Obtains and documents a health history for acute complex, critical, and chronically ill patients. 3.Performs and documents complete, system-focused, or symptom-specific physical examinations on acute complex, critical, and chronically ill patients. 4.Assesses the need for and performs additional screening, based on initial assessment findings. 5. Performs evaluations for substance use, violence, neglect and abuse, barriers to learning, and pain. 6.Distinguishs between normal and abnormal developmental and aged-related physiologic and behavioral changes in complex acute, critical, and chronic illness. 7.Assesses for multiple interactive and synergetic effects of pharmacological agents, including over-the-counter (OTC) preparations and alternative and complementary therapies, in patients with complex acute, critical, and chronic illness. 8.Assesses the impact of an acute, critical and /or chronic illness or injury on the individual's • Health status (physical and mental) • Functional status, including activity and mobility • Growth and development • Nutrition status • Sleep and rest pattern • Quality of Life • Family, social, and educational relationships

Table2: CCCNS Competency from the organization (Continued)

Domain / ACNP- competency	Performance indicator
I. Health promotion, health protection, disease prevention and treatment (cont.) **a. Assessment of health status** (cont.)	9.Provides for the promotion or health and protection from disease by assessing for risks associated with care of complex acute, critical, and chronically-ill patients, such as: • Physiologic risk, including, but not limited to immobility, impaired nutrition and immunocompetence, fluid and electrolyte imbalance, invasive interventions, therapeutic modalities, and diagnostic tests. • Physiologic risk, including, but not limited to impaired sleep and communication, and crisis related to threat to life, self- image, finances. Medication side-effects, home and educational environment, and altered family dynamics. • Health care system risks associated with care complex patients, including, but not limited to, multiple caregivers, continuity of care, and coordination of the plan of care, polypharrmacy, communication with family or between multiple care providers. 10.Prioritized data collection data, according to the patient's immediate condition or needs, as a continuous process in acknowledgement of the dynamic nature of complex acute, critical, and chronic illness. 11.Assesses the needs of families and caregivers of complex acute, critical, and chronically-ill patients.
b. Diagnosis of health status Analyze, sensitize the assessment data, include, make clinical judgments and decisions to determine the needs of patients, family members or multiple system health problems	1.Diagnoses acute and chronic conditions that may result in rapid physiologic deterioration or life-threatening instability. 2.Manages diagnostic tests through ordering, interpretation, performance, and supervision in the assessment of complex acute, critical, and chronically-ill patients 3.Utilized specialty-based technical skills in the performance of diagnostic procedures to confirm or rule-out health problem 4.Synthesizes data from a variety sources to make clinical judgments and decisions about appropriate recommendations and treatments.

Table2: CCCNS Competency from the organization (Continued)

Domain / ACNP- competency	Performance indicator
I. Health promotion, health protection, disease prevention and treatment (cont.) **b. Diagnosis of health status** (cont.)	5.Prioritized health problem during complex acute, critical and chronic illness. 6.Formulates differential diagnoses by priority considering multiple potential mechanisms causing complex acute, critical and chronic illness states. 7.Diagnoses complications of complex acute, critical, chronic illness considering multiple system health problems. 8.Diagnoses common mental health and substance use or addictive disorder/disease, such as anxiety, depression, and alcohol and drug use, in the presence of complex acute, critical, chronic illness. 9.Reformulates diagnoses by priority based on new or additional assessment data and the dynamic nature of complex acute, critical, chronic illness.
c. Plan of care and implementation of treatment To formulates, develops, implements, manage, modify, consult, coordinate, evaluate plan of care / treatment with patients/ family members and multidisciplinary team considering to optimize outcomes**,**	1.Formulates a plan of care to address complex acute, critical, chronic health care needs. • Integrates knowledge of rapidly changing pathophysiology of acute and critical illness in the planning of care and implementation of treatments. • Prescribes appropriate pharmacologic and nonpharmacologic treatment. • Utilized evidence-based practice in planning and implementing care. 2.Implements interventions to support the patient with a rapidly deteriorating physiologic condition, including the application of basic and advanced life support and other invasive interventions or procedures to regain physiologic stability. 3.Manages, Through ordering, performance, interpretation, or supervision: • Interventions that utilize technological devices to monitor and sustain physiological function • Diagnostic strategies and therapies to monitor and sustain physiological function and ensure patient safety, including, but not limited to, EKG interpretation, X-ray interpretation, respiratory support, hemodynamic monitoring, and nutritional support

Table2: CCCNS Competency from the organization (Continued)

Domain / ACNP- competency	Performance indicator
I. Health promotion, health protection, disease prevention and treatment (cont.) **c. Plan of care and implementation of treatment** (cont.)	4.Performs therapeutic interventions to stabilize acute and critical health problems, such as suturing, wound debridement, line and tube insertion, and lumbar puncture. 5.Analyzes the indications, contraindications, risk of complications, and cost- benefits of therapeutic interventions. 6.Manages the plan of care through evaluation, modification, and documentation according to the patient's response to therapy, changes in condition, and to therapeutic interventions to optimize patient outcomes. 7.Manages the patient's response to life support strategies. 8.Manages pain and sedation for patients with complex acute, critical, and chronic illness. • Prescribes pharmacologic and nonpharmacologic interventions • Monitors patient's response to sedation. • Evaluates patient's response to therapy and changes the plan of care accordingly. 9. Implements palliative and end of life care in collaboration with the family, patient (when possible), and other members of the multidisciplinary health care team. 10.Initiates appropriate referrals and performs consultations. 11.Assures that the plan of care is individualized, recognizing the dynamic nature of the patient's condition, reflecting the patient's and family's needs, and considering cost and quality benefits. 12.Coordinates inter- and intra-disciplinary teams to develop or revise plans of care focused on patient and/or family concern. 13.Incorporates health promotion, health protection and injury prevention measures into the plan of care within the context of the context of the complex acute, critical, and chronic illness. 14.Facilitaes the patient's transition between and within health care settings, such as admitting, transferring, and discharging patients.

Table2: CCCNS Competency from the organization (Continued)

Domain / ACNP- competency	Performance indicator
II. Nurse practitioner-Patient relationships Perform, communicate, facilitate, advocate and apply ethical principle in caring and management for complex acute, critical and chronic illness or injury.	1.Applies ethical principles in caring for complex acute, critical, and chronic patients. 2.Communicates effectively with the patient and the family experiencing complex acute, critical, and chronic illness. 3.Facilates patient and family decision making regarding complex acute, critical, and chronic illness treatment decisions, end of life care, and organ donation. 4.Applies principles of crisis management in assisting the patient and family experiencing complex acute, critical, and chronic illness. 5.Functions as patient advocate for those unable to do so for due to acute, critical, and chronic illness or injury or developmental level.
III. Teaching-Coaching Acquire, maintain current knowledge and demonstrate leadership through teaching, coaching, guiding, mentoring to complex acute, critical, chronically-ill and healthcare team with effective communication	1.Developes with the patient, family, and caregiver(s) educational interventions appropriate to complex acute, critical, and chronically-ill patient's needs, values, and cognitive level. 2.Demonstrates effective communication skills in addressing sensitive topics with patients and families such as life threatening illness, organ transplantation, death, anxiety, substance use, palliative care and other related problems. 3.Provides anticipatory guidance that is age and developmentally appropriate within the context of complex acute, critical, and chronic illness. 4.Incoorporates the integration of self-care activities for complex acute, critical, and chronically ill patients. 5.Reinforces positive health behaviors among complex acute, critical, and chronically ill patients. 6.Teaches patients and families to advocate for themselves in complex acute health care environments. 7.Demonstrates leadership of the health care team through teaching, coaching, and supporting to advance the plan of care for complex acute, critical, and chronically ill patients.

Table2: CCCNS Competency from the organization (Continued)

Domain / ACNP- competency	Performance indicator
IV. Professional Role Participates**,** integrates, contributes research / knowledge or research utilize that promote, develop positive outcomes to the patients, family, nursing personal, other healthcare team members also professional organization and present to the public.	1.Participates in formal and informal education provided to other healthcare professionals to promote positive outcomes during complex acute, critical, and chronic illness. 2.Integrates research to promote evidence-based practice for patients with complex acute, critical, and chronic illness. 3.Contributes to research that promotes positive outcomes during complex acute, critical and chronic illness. 4.Participates in professional organizations that influence the health of acute critical, and chronically-ill patients and support the role of the ACNP. 5. Interprets the ACNP role to other health care providers and to public. 6. Interprets the ACNP role into systems, processes. And decision-making to function fully within the health care team. 7.Serves as a knowledge resource in the design and development of complex acute, critical, and chronic health services 8.Integrates knowledge of stress management principles when faced with complex acute or traumatic situations.
V. Managing and Negotiating health care delivery systems Provide, collaborate, promote and influence resources utilization in order to manage/service effectiveness and fiscal accountability in delivery of patient care with other health care professionals.	1.Works collaboratively within a variety of health professionals to promotes stabilization and restoration of health in complex acute, critical, and chronic illness. 2.Promotes collaboration among members of the multidisciplinary health care team to facilitate optimal care for complex acute, critical, and chronic patients. 3.Utilizes principles of case management when overseeing and directing health care services for complex acute, critical, and chronic illness. 4.Mantains current knowledge regarding state and federal regulations impacting ACNP practice. 5.Promotes efficient use of resources and provision of quality care to achieve optimal cost-effective outcomes.

Table2: CCCNS Competency from the organization (Continued)

Domain / ACNP- competency	Performance indicator
VI. Monitoring and ensuring the quality of health care practice	1.Utilizes internal resources (e.g. ethics committee, risk management, legal department) and external resources (e.g. professional organization, government officials, community agencies) to facilitate the resolution of patient advocacy, moral, and ethical issues. 2.Promotes an environment for ethical decision-making and patient advocacy. 3.Promotes valuing of lifelong learning and evidence-based practice while continually acquiring knowledge and skills needed to address questions arising in practice to improve patients care. 4.Contributes to the knowledge base of the healthcare community through research, presentations, publications, and involvement in professional organizations.
VII. Cultural competence Utilizes research and knowledge of cultural diversity in caring for patients from various cultures.	1.Show respect for the inherent dignity of every human being, whatever their age, gender, religion, socioeconomic, sexual orientation, and ethnicity. 2.Accepts the rights of individuals to choose their care provider, participate in care, and refuse care. 3.Acknowledges personal biases and prevents these from interfering with delivery of quality care to persons of differing beliefs and lifestyles. 4.Recognizes cultural issues and interacts with patients from other cultures in culturally sensitive ways. 5.Incooporates cultural preferences, health beliefs and behaviors, and traditional practices into management plan. 6.Developes patient-appropriate educational materials that address the language and cultural beliefs of the patient. 7.Accesses culturally appropriate resources to deliver care to patients from other cultures. 8.Assists patients to access quality care within a dominant culture. 9.Developes and applies a process for assessing differing beliefs and preferences and takes this diversity into account when planning and delivering care.

Table3: Table of comparison competency of clinical nurse specialist from organizations.

CCNS- Competency	Organization				
	AACCN	BRN	CACCN	HCGI	NONPF
The Acute and critical care CNS 1. Collects data relevant to 3 spheres of influence: the patient and family members, nursing personal, and organizational systems	√	√	√	√	√
2. Analyzes the assessment data to determine the needs of patients, family members, nursing personnel, and organizational systems.	√	√	√	√	√
3. Identifies expected outcomes for patients, family members, nursing personnel, and organizational systems.	√	√	√	√	√
4. Develops and facilitates a plan that prescribes interventions to attain the expected outcomes for patients, family members, nursing personnel, and organizational systems.	√	√	√	√	√
5. Effectively implements the interventions identified in the plan(s) for patients / family, nursing personnel, and organizational systems.	√	√	√	√	√
6. Evaluates progress toward attainment of expected outcomes for patients, family members, nursing personnel, and organizational systems.	√	√	√	√	√
7. Systematically develops criteria for and evaluates the quality of nursing practice and organizational systems.	√	√	√	√	√
8. Evaluates his or her practice in relation to professional practice standards and relevant regulations	√	√	√	√	√
9. Acquires and maintains current knowledge and competency in the 3 spheres of influence in acute and critical care nursing	√	√	√	√	√
10. Contributes to the professional development of peers, colleagues and others.	√	√	√	√	√
11. Decisions and actions are made on behalf of patients and their family members, nursing personnel, and organizational systems and are determined in ethical manner	√	√	√	√	√
12. Collaborates with patients and their family members and healthcare personnel in creating a healing and caring environment.	√	√	√	√	√
13. Utilizes, participates in, and disseminates research to enhance practice	√	√	√	√	√
14. Influences resource utilization in order to promote safety, effectiveness, and fiscal accountability in the planning and delivery of patient care.	√	√	√	√	√

AACCN: The American Association of Critical Care Nurse, **BRN**: Board of Registered Nursing, A State of California Department of Consumer Affair, **CACCN**: Canadian Association of Critical Care Nurse, **HCGI:** Hartford Geriatric Nursing Initiative**, NONPF**: National Organization of Nurse Practitioner Faculties

Table3: Table of comparison competency of clinical nurse specialist from organizations. (continued)

CCNS- Competency	Organization				
	AACCN	BRN	CACCN	HCGI	NONPF
15. Utilizes research and knowledge of cultural diversity in caring for patients from various cultures.	-	-	-	-	√
16. Develops and implements educational programs that target the needs of staff to improve nursing practice and patient outcomes	√	√	√	√	√
17. Implements interventions that are effective and appropriate to the complexity of the patient acre problems and resources of the system.	√	√	√	√	√
18. Leadership	√	√	√	√	√
19. Communication skills	√	√	√	√	√
20. Critical thinking	√	√	√	√	√
21. Clinical decision-making	√	√	√	√	√
22. Collaborative	√	√	√	√	√
23. Collegiality	√	-	-	-	-
24. Ethical decision- making	√	√	√	√	√
25. Expert Clinical Practice	√	√	√	√	√
26. Mentoring skills	√	√	√	√	√
27. Information and Healthcare Technologies	√	√	√	√	√
28.Innovative	√	√	√	√	√

AACCN: The American Association of Critical Care Nurse, **BRN**: Board of Registered Nursing, A State of California Department of Consumer Affair, **CACCN**: Canadian Association of Critical Care Nurse, **HCGI:** Hartford Geriatric Nursing Initiative, **NONPF**: National Organization of Nurse Practitioner Faculties

Table4: Analysis and extracted data from Research

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Ellen A. McFadden, & Mary Ann Miller, 1994 VI U.S.A	Descriptive study	751 CNSs across the United States -questionnaires,	*Clinical Nurse Specialist Practice: Facilitators and Barriers* -Health care system changes affecting CNS role implementation was categorized according to cost issue employment of CNS changes in patient care and changes in the profession • Cost containment factors *Barriers*: limited in clinical time / research time, *Facilitators*: to be more focused on patient outcomes, to document the effectiveness of their role and save cost for the institution. • Changes in the profession and in patient care *Barriers*: nurse shortage, increasing patient acuity and hi-tech patient care. - Supportive resources for implementation of CNS roles were categorized into three categories, organization 1. Organizational resources; Nursing administrative support, definition and clarification CNS role, Physician support and acceptance, administrative skill, University collaboration. 2. Material resources; Availability of supportive services, Availability of continuing education, library resources, professional organizations. 3. Human resources; Opportunity for CNS networking, peer and staff support, CNS mentor. CNS role implementation *Facilitators*: assurance of patient care, cost effectiveness, cost containment ,increased patient acuity and high-tech care, increased continuing care and a high standard of care (best practice), supporting environment, fund, well-organized orientation program, CNS support group/network or peer. *Barriers*: cost containment, Lack of professional support service (secretaries, computers, and statistical consultants) influenced in researcher roles. Inadequate preparation (administrative role/ basic management principle, time management),

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Paula Roe-Prior **&** et.al., 1994 VI U.S.A.	Descriptive study	Health care providers from home care agencies (36) and in-hospital (14) -questionnaires	*Critical Care Clinical Nurse Specialist in Home Health Care: Survey Results* -Patient's need: high technology, complex home care, CCCNS, who are knowledgeable about the multidimensional aspects of advanced technology. -CCCNS: discharge plan, educator, coordinator and consultant for meet patient & family needs, consultant for home health care nurse /home care agency -Improve patient &family outcomes: shorten LOS, reduce cost, patient safety in home health care -High-tech & complex home health care: Unique specialty area, consider reimbursement issue -The preparation of CCCNS to develop competent of knowledge of advanced technology and skill of communication or managing to meet the population health care needs is important.

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Yvonne K. Scherer, & et.al., 1994 V U.S.A.	The exploratory study	313 nursing administrators -questionnaires	*Nursing Administrators' Perceptions of Critical Care CNSs* - Over 90%of the CCCNS were perceived by the nursing administrator as functioning as expert clinician, educator and consultant/change agent (by orders). **CCCNS role functions** As clinical expertise, working in the critical care setting must be involved in diagnosis, management and evaluation of patient care. As educator, disseminate information to staff; serve as role model to health care team members. And provided education, information and support to patient and families, guiding and directing the practice of nursing As consultant/change agent, facilitate problem solving and decision making, serving as resource person in direct care patient to members of health care teams. Expand this role as "external consultant (to community, home health-care agencies currently providing high technology care), networking As Manager, be valuable resources by serving as active members of hospital committees. As researcher, conduct/ participate and promote clinical research in areas of expertise to healthcare team members, Research results should be published and presented, besides benefiting patient care and bringing recognition to the individual nurse and the hospital (positive public image). As advocate, protecting the patient's rights who are involved n research studies because patients are critically/acutely ill and may be unable to advocate for themselves. As collaborator, Promoting a collaborative relationship in work environment, partnership of team As Leadership, team leader, mentoring profession presentation, publishing skills, active involve professional organizations (local/national level) **Care outcomes in competent CCCNS** Improving patient care ,creating healthy environment, cost-effectiveness, decreasing LOS in critical care, more efficient use of nursing staff's time (time management), cost – saving equipment

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Erlinda C. Wheeler. 1999 IV U.S.A	Quasai-experimental, comparative study	-128 random patients (4 orthopedic units from 4 hospitals in the Northeastern United States.) -gr.I 64 were from with unit-based CNSs -gr.II 64 were from without unit-based CNSs. Retrospective chart review	*The Effect of the Clinical Nurse Specialist on Patient Outcomes* -The mean TLOS of patients on unit-based CNS was 5 days nonunit-based CNSs was 6.72 days ($p < 0.001$). Patients on unit-based CNSs also had significantly shorter TLOS than whom on nonunit-based CNSs when they stay in the rehabilitation unit. -Patients on unit based and nonunit -based CNSs were sent to rehabilitation unit, that needed more time to become independent in their ability to transfer from bed to chair and to ambulate without assistance, were 11% and 40%. -CNSs are key position and need competent to influence the care of patients that lead to positive outcomes. - Effect of unit-based CNSs, Case manager, Good care outcomes, improve quality of care, decreasing length of stay, decreasing complication, reduce cost, reduce mortality rate, reduce health care cost, and health care utilization,
Colleen Counsell, & Michele Gilbert. 1999 III U.S.A	QI Project Program evaluation (pilot study)	9-month project implemented on acute care neurosurgical unit Discharge process	*Implementation of a Nurse Practitioner Role in an Acute Care Setting* As a key communicator, ARNP increased satisfies patient and family also among disciplines directing the plan of care and provide consistent information with the patients' transition, encourages staff to think critically and participate in the plan of care for patient in a more active manner, through one-on-one mentoring or provide clarify information. -Competent interpersonal communication skill, critical thinking and decision –making in care coordination, (acute care setting- ICU transition, discharge process) 1) determine plan of care before admission, 2) perform unit activities; participate in patient round with health care team, assess and implement, review care plan, document nursing interventions, mentor floor staff 3) Evaluate and streamline nursing interventions; monitoring frequency of nursing tasks, assess teaching plans, establish a nursing plan for patient progression. 4) Collaborate with management team to evaluate practice change, these make more positive outcomes. -Quality improvement: Quality of care, decreasing LOS, saving ICU cost, decreasing patient's family complaint (patient & family's satisfaction), staff development.

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Sandra, & et al., 2000 VI Australia	Qualitative Research Descriptive	Specialist critical care nurse volunteer (n = 47) -Data from the care plan -Flow chart -Interview	*The development of competency standards for specialist critical care nurses* -There are 6 domains of 20 competency standard for specialist, professional practice, reflective practice, enabling, clinical problem-solving, teamwork, leadership. -Each competency standard is divided into component parts or "elements", illustrated with performance criteria. -Competency standards and elements were widely applicable in all areas of critical care but the performance criteria are specific to the unique clinical setting. -Specialist knowledge is facilitating optimal patient's outcomes and supporting by professional development, creativity, innovation, and superior communication skills. -Credentialing of specialist practice has been proposes as a strategy to ensure optimal care is provided to the health care consumer, enhance the level of nursing practice, recognize and reward excellence and support professional regulation.
Mary H. van Soeren & Vaska Micevski 2001 VI Canada	Descriptive study	-Health care Providers in cardiac/critical care, geriatrics, and nephrology (n = 68). :ACNP (n=14), physicians (n =12), administrators (n = 8), staff nurses (n = 34) -Questionnaire (fixed and opened-end)	*Success indicators and barriers to acute nurse practitioner role implementation in four Ontario hospitals* - The Competencies / attributes that necessary are clinical expertise, leadership skill, communication skills, and interpersonal skills. - The 2 important barriers indicators of the ACNP role are lack of mentorship and Level of preparation. -One challenging aspect of role implementation for ACNP, was balancing the work and multiple demands on their time, to provide staff education (sharing knowledge and providing education/professional), self-directed learning, designate for research, develop balance workload.

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Zhi-Xue Zhang & et. al.,2001 IV China	Qualitative Research Content analysis	-50 Female experienced nurse (n=50) -Hospitals in Beijing in Mainland China -Semi structured Questionnaire Interview	*Nursing competencies: personal characteristics contributing to effective nursing performance* -Performance to effective outcomes -Nursing competencies: characteristics of provider to effective and /or superior performance are Interpersonal understanding, commitment, Informational gathering, thoroughness, persuasiveness, compassion, comforting, critical thinking, self-control, responsiveness. -In this study indicated that Interpersonal understanding is the most important characteristics for good nursing performance. -Characteristics leading to incompetent performance are Self-control, were not thorough in nursing situation -This behavioral descriptions will make assessment and development of nursing competencies.
Suzanne M. Burns, Sidenia Earven. 2002 IV U.S.A	Program development / evaluation (QI project)	-699 Long –term mechanical ventilation (LTMV) patients, -pre OM n = 575, post OM n = 124 -Clinical pathway, -weaning protocol /Burns' Wean assessment program (BWAP) -A weaning assessment tool	*Improving outcomes for mechanically ventilated medical intensive care unit patients using advanced practice nurses A 6-year experiences* -APN is key factor to Improve care outcomes, better clinical and financial outcomes. / reduce ventilator days, length of stay, and length of ICU, per- patient cost. -A key attribute of the APN (OM) role is communication with team (identify patient needs, immediate intervention, appropriate decisions. -Characteristics and competencies of OM Team leader, Advocacy, collaborate, clinical expertise(knowledgeable, excellent clinical skills), good communication skills, cooperative, team approach, coaching & guiding, management, leadership, researcher, flexibility, accountability, responsibility, creativity. -APN who are uniquely qualified to ensure successful resolution of complex clinical and system issues "LTMV patient" = who required mechanical ventilation for 3 days. "OM" = outcome manager

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Dale Russell, & et.al., 2002 IV U.S.A	Program development/ evaluation (QI project)	-524 adult neuroscience patients (non-ACNP management group/ retrospective group n=122 -ACNP management group / prospective group n = 402) -Clinical pathway -Neuroscience Outcomes worksheet	*Effect of an outcomes-managed approach to care of neuroscience patients by acute care nurse practitioner* -ACNP as an outcome manager to improve care outcome of complex case population. -Improved outcomes occurred in the patients managed by ACNPs, that decreasing system variation more efficient and effective care delivery. They improved by identifying patients at risk, closely monitoring complications and having a consistent advanced practice nurse to guide and manage the care of specified groups of patients. -Competency: advanced assessment, care management skills, communication skills, good judgments and quick decision (Acumen), knowledgeable, system savvy. -characteristics of ACNP: credibility and acceptance from multidisciplinary team, assertiveness -Improve clinical outcomes, financial outcomes: decreasing cost, LOS, LOS in ICU, reduced complications/ Urinary tract infection, skin breakdown, pneumonia, etc. -Outcome-management model -Improve care outcomes are early identify, monitoring care elements and appropriately care management, by use best practice.

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Adrian W Ong, & et al.,2002 IV U.S.A.	Retrospective study (January 1997-December 1998)	158 autopsy review trauma and burn – related death in ICU -The medical records and autopsy reports. -a modification of Goldman's criteria	*Unexpected findings in Trauma patients dying in the intensive care unit: Results of 153 consecutive autopsies* -Discrepancies were classified using a modification of Goldman's criteria into three main categories: (by a panel of 4 surgeons/ AWO, SMC, MGM, ESB) *class I, missed major diagnoses that if recognized might have resulted in alteration of treatment and change in outcomes. *class II, missed major diagnoses that may or may not have altered treatment but would not have changed outcomes. * class III, missed minor diagnoses. -Change in outcomes was defined generally as "prolongation of survival with meaningful quality of life." - 4 (3%) patients had class I: bowel infarction, meningitis, retroperitoneal abscess, bleeding gastric ulcer. 25 (16%) patients had class II and 12 (8%) patients had class III -Pneumonia was the most common missed diagnosis. -The autopsy can provide valuable feedback in identifying clinical problems in ICU patients. - Changing in Outcome may be or may be not from Health service delayed. - Early detection and appropriate(quick) monitoring can improving the quality of care in critically ill trauma patients
Leslie A. Hoffmann, & et,al., 2003 IV U.S.A	A comparative longitudinal study	1 ACNP and 6 physicians The Clinician Activities Tool	*Management of Patients in The Intensive Care Unit: Comparison via Work Sampling Analysis of an Acute Care Nurse Practitioner and Physicians in Training* -ACNP spent more time interacting with patients, patients' family, nursing staff and collaborating with other health care team members. -Both managed a similar case load with similar acuity as indicated by scores on the Acute Physiology and Chronic Health Evaluation ill on SD-MICU admission. -ACNP enhanced quality of care, enabling continuing care, giving increased attention to issues of patients and patients' families, increasing Team's relationship ,promoting team-approach, reduce complication rates, shorten LOS, reduce costs, greater meet needs of patient & family, enabling continuing care

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Tom Ahrens, & et. al., 2003 III U.S.A	-comparative experimental design -QI project	-151patients judged to be at high risk of death in MICU -Intervention group n= 43, medical director teamed with a CNS -control group n= 108, an attending care (standard)	*Improving family communication at the end life: Implications for length of stay in the intensive care unit and resource use* -Use of a physician and a clinical nurse specialist focused on improving communication with patients and patients' families reduced length of stay and resource utilization. -early, frequent, and consistent communications by attending physician and advanced practice nurse team can support families' end of life decisions. -Clinical nurse specialist in palliative team in ICU makes better outcomes. -High levels of family stress, complex information, inadequate time, unskilled interactions, and lack of consistency make communication difficult. -Competency in palliative care; communication skills, ethical, empower, guidance, support, collaboration, engaged health care provider in making decision, and trust.
Leslie A. Hoffman & et. al., 2005 III U.S.A	-Quasai experimental Comparative study	-526 patients, a nonrandomized in subacute MICU, equivalent time sample, admitted to the unit > 24 hours were managed by -Gr.1 a ACNP and attending physician team n = 250 -Gr.2 a critical care/ pulmonary fellow and attending physician team n = 276 -The electronic medical records database -The computerized bedside charting system	*Outcomes of care managed by an acute care nurse practitioner/attending physician team in a subacute medical intensive care unit* -Duration of mechanical ventilation, LOS, readmission rates, and mortality did not differ for patients cared by an ACNP versus fellows. -Patients managed by the fellows more likely reintubation, this speculate that it was the result of a difference in time available to spend in direct supervision of patients. -The ACNP with their constancy presence on the unit can provide more proactive care (make adjustments in care) than fellows, who have greater off-unit responsibilities. -In addition to increasing the number of care provides available this expanded role could have other advantages. The care of high acuity ICU patients demands extensive time of intentivists, when the availability of physicians is a limitation factor in weaning; patients who require prolonged mechanical ventilation are at risk for having lower priority. -Teams that include an ACNP and attending physician can safely managed care of chronically critically ill patients. -An ACNP can competently, with appropriate training and supervision, assume responsibility for the medical management of a case load of chronically critically ill patients in subacute MICU. -The ACNP has commitment, consistency, clinical judgment, predictability, advocacy that make effective care outcomes

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Ruth M. Kleinpell. 2005 VI U.S.A	longitudinal survey study (1-5 years)	437 ACNP -Questionnaire (44 Question /3 aspect; role aspects, practice components, and role change after certification)	*Acute care nurse practitioner practice: results of a 5-year longitudinal study* -Most ACNPs practice in tertiary care practice settings although nearly 50% did not list intensive care or acute care practice sites, indicating expansion of the ACNP. -Various practice settings of ACNPs: *Tertiary care ICU*, cardiothoracic, coronary, medical, surgical, Neurological, transplant *Tertiary care, emergency/acute care settings*, emergency, trauma etc. *Specialty tertiary care* bone marrow transplantation, neurology, oncology etc. *Clinic setting*, allergy, cardiology geriatrics, etc. *Other;* dialysis center, home care, etc. -ACNP roles has been evolved with respect to type of practice, with increases in specialty-based units (37% in year1 up to 49% in year 5), and collaborative practice roles (17% to 25%). -Advantages of being an ACNP include autonomy, involvement with patients and their care, and opportunities for collaboration. -Disadvantages are lack of recognition, not being considered a professional peer. Often such problem stem from their inadequate knowledge or the capabilities. - ACNP impact on outcomes: LOS, costs, medical management, complication, resource utilization, continuity of care, patients' access to care, patients' satisfaction.
Karin T. Kirchhoff, & et.al,. 2006 VI U.S.A	Descriptive National survey (summer of 2003 until in the spring of 2004)	-120 Facilities (>50 beds) with critical care units -300 critical care units in The United States. -questionnaires	*American Association of Critical-Care Nurses National Survey of Facilities and Units Providing Critical Care* -The global changing that learn from other country (acuity system, policies, characteristics of unit, administrative structure, cost containment, staffing), how to develop Advance practice nurse's competency in critical care for positive outcomes in each spheres, patient, nurse, and system. - 42% of critical care units had hospital-employed CNS. -CNS, NP, Advances practice nursing make positive care outcomes and quality indicators -Large hospitals (>300 beds), urban hospitals, academic medical centers and government nonfederal facilities need CNS. - Most CNS earned an hourly wage entry level of between $ 24 and $34 (mean ~ $29/hour). 10 years Experienced CNS provides hourly wage more than entry level.

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Beth Sievers, & Sherry Wolf. 2006 VI U.S.A	QI Project	2 CNS students, 3 physician residents, 2 physician fellows (1-month project) Medication reconciliation in the outpatient setting.	*Achieving Clinical Nurse Specialist Competencies and outcomes Through Interdisciplinary Education* -Educational environment teach and model interdisciplinary collaboration as a means to improve the quality of care and patient safety. -Interdisciplinary clinical experiences offer students opportunities to develop needed collaboration and communication skills. -Educators should create interdisciplinary educational experiences for students to better prepare them for their roles in a clinical setting. -Interdisciplinary clinical experiences environment make better outcome, and develop CNS students' core competencies and essential characteristics. -CNS characteristics: leadership, collaboration, consultation skills, ethical conduct, and professional attributes. -Behaviors: Respect, Rapport, flexible, confident, honest, willing to take risks, listening, validating, providing. receiving feedback, and conveying ideas, critical thinking, decision making ,research utilization, changing
Eva Lindberg, 2006 IV Sweden	Qualitative research Phenomenographic study	-3 intensive care nurses -3 assistant nurses at CCU. (n =6) -Interview -The form of question (a second interview) -Tape recorders	*Competence in critical care,* *What it is an how to Gain: A qualitative study from the staff's point of view* **Competencies characteristics** -A competent person working in the CCU can collaborate, understand the situation, can act efficiently and correctly, aware of own body of knowledge and know limitation. Because of these qualities she can put the patient before technology. -Personal traits and the right kind of attitude are the most important foundations for a competent ICU nurse. -A professional based identity is something that promotes strengthens, and explicates an internal platform, would function well with the teamwork -A person with an understanding based competence; it would seem that a good level of competence should be in the form of a certain attitude. -The respondents expect competence to be the expression of an attitude So understanding-based competence becomes explicit through a well-adapted attitude. -Workplace environment stimulate competence development.

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Prisana Wasee, & et. al., 2006 IV Thailand	-Outcome research -comparative design study retrospective and prospective uncontrolled before-and-after intervention	-114, more 24 hours mechanical ventilation, patients in surgical intensive care units. (pre-intervention n = 59 post-intervention n = 55) -The Evidence-Based Ventilator Weaning protocol (EBVEP), -Data collector form (personal data, weaning protocol form)	*Effectiveness of Evidence -Based Ventilator Weaning Protocol Implementation Among Patients in Surgical Critical Care Unit at Chiangrai Prachanukrau Hospital* -EVBEP significantly reduced weaning time, cost, ventilator days, and length of stay in surgical intensive care. Reintubation rate between groups was not different. -Quality improvement through evidenced based practice, weaning protocol, clinical practice guidelines -Multidisciplinary team, Physicians, CNSs, APNs, staff, physical therapist etc. collaborated to improve care outcome in critically ill. -Improve care outcomes by weaning protocol, reduce length of stay, weaning time, ventilator day, cost. -APN initiate & innovate to improve care outcomes by evidence based practices and researches.
Suzanne E. Mclean. & et. al., 2006 III U.S.A.	-A prospective comparative design, (before and after) -QI project(PDSA) -Chart review, -discussion with multidisciplinary team at bedside -content analysis (focus group) -Survey	-129 patients in Adult ICU (before = 63, after = 66) -112 multidisciplinary team members -Protocol-directed weaning ,Chart -Information sheets (for staff/focus group)	*Improving adherence to a mechanical ventilation weaning protocol for critically ill adults: outcomes after an implementation program* -These clinical outcomes may potentially reduce health care costs because of shorter stay in ICU and reduced risk associated with mechanical ventilation. -Using an improvement process improved the staff's understanding and adherence to the weaning protocol -Protocol -directed weaning, evidenced best practice, is an effective strategy in the management of mechanical ventilation with critically ill adults by multidisciplinary team. -On the basis of this result, the Model for Accelerating Improvement was recommended as a model for activating change. - Safety culture is creating health environment

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Deborah Becker. & et. al. 2006 VI U.S.A.	A National Task force survey	158 CNS (375) 77 ACNP (375) -Questionnaire -Focus panel -Telephone interview -Independent review	*Activities performed by acute and critical care advanced practice nurse: American Association of Critical care Nurses study of practice* *Competency of CNS and ACNP(characteristics)* 1)Clinical judgment 2)Advocacy and moral agency 3)caring practices 4)Collaboration 5)Systems thinking 6)Response to diversity 7)Clinical inquiry 8)Facilitator of learning -CNS rates activities in the nurse competency (characteristic) of **clinical judgments and clinical inquiry** as most critical, whereas ACNP rates primarily on **clinical judgments**. *Spheres of influence* -Both CNS and ACNP most activities were directed toward more than a single sphere of influence (individual patient/population, nursing staff , or other) -The difference is **the time each spent** with individual patient that reflect direct care role of ACNP. -CNS's practices direct their roles across all spheres. *Problems related to patient care* -CNS most often provided care for patients with life threatening, coagulopathies, acute renal failure, diabetic ketoacidosis, chronic renal failure and septic shock. -ACNP reported caring most often with acute hypoglycemia, life threatening, coagulopathies, stroke, chronic lung disease, gastroesophageal reflux, acute renal failure, chronic renal failure and septic shock. Four problems require amounts of time for both CNS and ACNP were acute and chronic renal failure, life threatening, coagulopathies and septic shock. *Experience Inventory* -CNS and ACNP have similar for the advanced practice activities in critical care, six unique items; hemodynamic monitoring, pulmonary artery; cardiac assist devices, invasive determination of cardiac output and cardiac input, direct monitoring of the right atrium and left atrium /pulmonary artery; monitoring of intracranial pressure.

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
Kate Curtis. & et. al., 2006 IV Australia	Cohort study	-gr.I Trauma patients (control gr. n= 777) -gr. II with trauma case management (TCM gr. n= 754) -Level one of trauma center -Trauma data base	*Trauma case management: Improving patient outcomes* -Trauma case management has been proposed as a way of ensuring the care of timely, well organized and efficient in patient trauma for decreased mortality, morbidity, complications, resource utilization; improve the quality of care and life. -TCM, Improve quality of care, reduced complication rates; LOS, coagulopathy ($p < 0.05$), DVT ($p < 0.04$), cost, resource utilization Appropriate service from multidisciplinary team, streamlining care. - TCM can identified patient and family needs and appropriate / coordinate service in each phase as soon as possible, in turn, enabled allied health staff adequate time to prepare and plan of care, (discharge). -TCM initiates / provides effective and efficient communication skills to improve care outcomes
Teri M. Kozik, 2007 VII U.S.A.	Research Utilization//QI (case report)	1 patients “hypothermia protocol”	*Induced Hypothermia for patients with cardiac arrest role of a clinical nurse specialist* -CNS play a key role in providing quality patient care , improving patients outcomes, reducing hospital costs and engaging staff to use research to improve and support practice. -CNS initiate and collaborate multidisciplinary team to develop research- based care and “hypothermia protocol “empower them to become best practice. In Saint Maryland hospital. -A-56-year-old smoker with type2 diabetes who had cardiac arrest and post CPR. He was provided this protocol and was discharged home to his family’s care, had not neurological deficit.

Table4: Analysis and extracted data from Research (continued)

Author/year/ level /country	Method	Subjective / Instruments	Title / Extract data
A. Ulvik. & et. al. 2007 IV Norway	Cohort study	325 adult trauma patients	*Trauma patients in the intensive care unit: short-and long term survival and predictors of 30-days mortality* -The 30-day mortality rate was 16.9%, ICU mortality rate was 13.8% and hospital mortality rate was 17.8%. Long term survivors (observation time 1-7 years) was 77.8%. -The mortality of trauma patients was high Severe head injury was the most common cause of death and strong predictor of 30-day mortality (2-4 fold). -Age was a significant risk factor only for patients above 50 years. -SAPII was a useful predictor of 30-day mortality. -Theses findings may enable to identify, at early stage, trauma patients at the high risk of death; moreover, more attention needs to be given in order to further reduce the mortality rate and improved risk assessment may also be useful for identification of unexpected non-survivors during the first 30 days.

Table5: Analysis and extracted data from Non-research

Author/ year / country	Type / Level	Title / Extract data
Shannon M. FitZgerald, & Sylvia H. Wood. 1997 U.S.A.	Article VII	*Advanced Practice Nursing: Back to the future* -Evolution of APNs (CNS, NP) developed to meet health care needs; roles and the scope of practice have broadened. -New roles are evolving as managed care affects every aspects of the US health care delivery system. -CNSs provide an expertise in complex nursing, the resource person for patient care teams/nursing team. -CNSs blend advanced knowledge, a highly technical, complex skills and advanced clinical decision making in expert nursing practice from critical care and delivery of continuum care. -APNs do are fully cost effective and do thing in such a different way that cost saving realized, patients and families are better served, and that APNs lead the way as the ultimate collaborative, multiskilled professionals of the future. -APNs provide cost – effective, high quality care
Peter Kai-Cheung Chuk 1997 Hong Kong	Article VII	*Clinical nurse specialists and quality patient care* 12different clinical areas are in several large public hospitals and are recognized, by the hospital authority, as a new career ladder for the professional development of RNs. The Position of CNS s promotes professional development. -CNSs practice nursing with distinct characteristics, clinical judgment and leadership, (direct and indirect care) aiming for an effective management of the complex health problems of patients, improve the quality of care.. -To utilize the clinical judgment, CNSs stay within realm of direct patient care. The leadership of CNSs is demonstrated by their subroles, educator, consultant, researcher, change agent, advocator -Two limitations for novice CNSs to exercise their role effectively are : 1) Role confusion because of the diversity in nature of CNSs subroles multifaceted. When problems occur not relating to their expertise, diminishing their self esteem and self confidence. 2) The titles of CNSs, with distinctive position and expectation -Role constraints are decreasing by adopted to minimize these issues and conflicts, a clear realistic job description, strong support to maximize the role potential, with nursing administrator/policies. -The Quality of care is improved by direct and indirect CNSs patient's care. -Specialization in nursing is both of specialist knowledge and refines skills.

Table5: Analysis and extracted data from Non-research (continued)

Author/ year / country	Type / Level	Title / Extract data
Board of Registered Nursing (BRN) *A State of California Department of Consumer Affairs*. 1999 U.S.A	Authority or Policy statement VII	*Certification of Clinical Nurse Specialist* - CNS Certification, Legal, Components of the CNS roles and performances - as table 1
Patt Cattini & Victoria Knowles 1999 U.K.	Opinion or report of expert committees VII	*Core competencies for Clinical Nurse Specialists: a usable framework* The lack of clarification regarding the role of the CNS can lead to confusion about the position the CNS holds in the hospital and the multidisciplinary team. - The Factors, is the dynamic nature of specialist practice by recognizing key elements within the role, do CNS at a high level that differ from other nurses a boundaries, flexible/cross boundary working, the capacity to bring about change. - 5 Key roles of CNS (Expertise, Researcher, Educator, Manager, Communicator) are identified and key statements, are common components of the work of CNS, were devised and added to define the role of CNS. - Competence is the ability to fulfill the nursing role effectively and/or expertly, recognizing that competence. - Standards of competence are the knowledge, skills and attitude necessary to demonstrate competence. - Standards of competency and modes of achievement were developed from key's role and key statements in order to measurement or observation that could be useful in practice. (framework of core competencies for CNS) - The standard is measured via the "mode of achievement". The outcome is achievement of the key role and key statements. - The framework enables CNS, to demonstrate competence, to used in portfolio, to develop performance, to appraisal and audit, to identify areas for continuing professional development. - CNS educational needs or CNS role developmental preparation. -Limitation of the framework (in this study) was specifically designed to be generic for CNSs working in district general hospital that can't represent the whole roles of CNS.

Table5: Analysis and extracted data from Non-research (continued)

Author/ year / country	Type / Level	Title / Extract data
Joanne Disch & et. al., 2001 U.S.A	Article VII	*The role of the Clinical Nurse Specialist in creating a healthy work environment* -A Healthy work environment is one "in which policies, procedures, and systems are designed so that employees are able to meet organizational objectives and achieve personal satisfaction in their work" (Simonnowitz, 1996). -The CNS role is based on the application of expert clinical and systems knowledge to improve outcomes of patient care and staff satisfaction and shaping the work environment. -The CNS and the nurse manager can create an environment in the critical care unit, allows the patients and families to receive quality care, fosters collegial, respectful, and enjoyable relationships among caregivers, and contributes healthy work environments between health team members in health system. -In creating healthy work environments: 1) Role of CNS 2) Preparing nurse for the important role of CNS by Master's educational programs, develop the skills and abilities to function as clinical expert in specialty area and strengthening to foster healthy work environment 3) Key partnerships for the CNS with other providers. -The CNS, increasing healthy work environment, quality of cares, patient & family outcomes improvement, staff / team satisfaction, empowerment, work retention, health care organization, decreasing staff's stress, burn out, interpersonal conflict& the ethical dilemmas. -The CNS's competencies, using networks, dealing with, problem solving, clinical and professional judgments, accountability, critical thinking, decision making, leadership, interpersonal communication skills.
S. Kerfian & et. al., 2001 U.S.A	Analysis article VII	*The development of advanced practice role: implications in the international nursing community* -The critical elements that have been identified in the development of APN roles in 4 countries;Brazil, Thailand, the United Kingdom and the United State of America. ***-Common critical elements*** are used to provide a framework for predicting the development of AP nursing roles, include influence of: The socio-political environment, Health needs in society, Health workforce supply and demand, Governmental policy and support, Intra/Interprofessional collaboration» Devlopment of nursing education, Documentation of effevtiveness of the advanced role. -Several factors continue to challenge the APN role(Joel, 1998 cited in Ketefian & et al, 2001). Include: Reimbursement issues, Prescriptive authority varies across the 50 states of the USA, Professional liability insurance and staff privilege issues ***-Current state and future of APNs:*** Impact of advanced in science and technology; Health needs of societies, Legislation and government support, *Trends, Nursing leadership, Skill mix*;

Table5: Analysis and extracted data from Non-research (continued)

Author/ year / country	Type / Level	Title / Extract data
Betty Davies & Anna Marie Gughes 2002 U.S.A	Article VII	*Clarification of Advanced Nursing Practice: Characteristics and Competencies* -It is necessary to work toward clarifying differences among various nursing roles in ways that promote understanding of nursing as a whole rather than divide the profession. Differences in function result from variation in knowledge and skill levels based upon experience and educational preparation. These differences evolve into scope of practice. When clarifying differences in level of function, not only talk about knowledge and skill levels but also about characteristics of individuals. -Characteristics of advanced nursing practice; risk taking, vision, flexibility, articulateness, inquisitiveness, and ability to lead; act as a catalyst for board system, change and develop and explore new avenues in a changing health care system. -Essential competence for advanced nursing practice; clinical expertise, critical thinking and analysis skills, clinical judgment and decision making, leadership and management, communication skills, problem solving, collaboration, education and research, program development. -Positive care outcomes; Patient & family, group, community, society -The nurse who practices as an advanced level demonstrates a combination of the characteristics and competencies . -The Advanced nursing practice maintain client care as a primary focus, continues to excel in complex practice situations, and fulfill the profession's ultimate goal of optimizing the health and well being not only individuals but also their families, groups, communities and society.
Brenda L. Lyon & Donna L. Boland 2002 U.S.A	Article VII	*Demonstration of Continued Competence: A Complex Challenge* -The Pew Commission deemed the evaluation of continues competence to be a central mechanism for ensuring public safety and recommended that all states require all regulated healthcare practitioners to demonstrate competency throughout their careers. Public health safety : care need, Legal, regulated health care providers -Domains of competence; Knowledge competence, Technical competence, Cultural competence, Communication competence. -Tools for competency's measurement & development; computer-based simulation, instituting practical examination, portfolio (recommended by NACNS). Result from a CNS's portfolio capture self assessment, including reflective learning experiences, and peer review, linking outcome data to job performance in each sphere of influence to a particular CNS's scope of practice. So that CNS's portfolio is a flexible tool for CNSs to develop their competencies and to facilitate evaluation in specialty/subspecialty area. -Continuing competency development; Self development

Table5: Analysis and extracted data from Non-research (continued)

Author/ year / country	Type / Level	Title / Extract data
Jill N. Howie & Michel Erickson 2002 U.S.A	Literature review VI	*Acute care nurse practitioners: Creating and implementing a Model of care and inpatient general medical service* Literature Review indicated that ACNP worked at hospital in various setting, emergency department fast track, neonatal intensive care unit, university hospital, surgical service/neurosurgical ICU, inpatient and outpatient service, trauma service, medical service and finding quality care outcomes from ACNPs; -care comparable to provided by house staff more cost-effectiveness (decreased LOS) -Improved access to care -less costly care, Decreased laboratory costs -Patients' satisfaction, decreased complaints -Improve documents -Minimized surgical delays -Better continuity with inpatient/outpatient care, decreased fragmentation of care -Individualized care -Decreased LOS for seriously injured patients -Decreased waiting time -Increased interactions between physicians and nurse -Enhanced roles of nurse in clinical decision, making and evaluation -Time saving for house staff, favorable ratings by house staff -Good collaboration between nurses, practitioners/physicians, other providers. -Acceptance by patients and families - Medical center, University of California created ACNP-hospitalist framework of care and finding ACNP create the ideal team situation, taking advantage of the strengths of all members on a medical service.

Table5: Analysis and extracted data from Non-research (continued)

Author/ year / country	Type / Level	Title / Extract data
Canadian Association of Critical Care Nurse (CACCN) 2002/© 2005 Canada	Position statements VII	*Critical care advance nursing practice* - As table 1
William. M. Daly & Ros Carnwell 2003 UK	Literature review VI	*Nursing roles and levels of practice: a Framework for differentiating between elementary, specialist and advancing nursing practice* - The UK health care context during 1990s was such that the rapidly evolving political, environmental, professional and patient-led demands for health and social care that why development of new roles for nurse was sustained and subsequent in the structure, funding, organization, and delivery of health care. -The Challenge now facing the profession overall and the NHS in the UK is to capitalize on the effectiveness of new nursing roles and develop a coherent approach to establishing a new career structure that reflects discrete roles, levels of practice and autonomy based on relevant programmed of preparation and evolving expertise. -Application of the concepts of role extension, role expansion and role development can facilitate decision-making about levels of practice and the result will be a greater degree of clarity that will, in turn, benefit health care consumers, high quality care outcomes, employers and professional colleagues.
AACN 2004 (retrieve 2007) U.S.A	Authority or Policy statement VII	*Standard of practice and performance for the acute and critical care CNS* -As table 1
AACN & HGNI 2004 U.S.A.	Authority or Policy statement VII	*Nurse practitioner and clinical nurse specialist competencies for older adult care* -As table 1 AACN: The American Association of Colleges Nursing, HGNI: Hartford Geriatric Nursing Initiative

Table5: Analysis and extracted data from Non-research (continued)

Author/ year / country	Type / Level	Title / Extract data
National organization of Nurse Practitioner Faculties Washington, DC 2004 U.S.A	Authority or Policy statement VII	*Acute care nurse practitioner competencies* -The preparation entry-level ACNP competencies is graduates of master's and post-master's program. -To provide advanced nursing care to patients with complex acute, critical and chronic health conditions, including the delivery of acute care services. Some to provide services to a specific patient population e.g., adult, child. -ACNP competencies preparation; specialty based populations and specialty-based area of practices, patient care needs, education. Acute Care Nurse Practitioner Entry-Level competencies in Graduate Nursing Education -The population in acute care practice is acutely, critically, chronic illness, or terminal illness, -Care needs; Complex care, Comprehensive care, Continuum care, high acuity care. -Care outcomes; the short-term goals include patient stabilization, minimization of complications, and promotion of physical and psychological well-being, the long-term goals restore maximal health potential while evaluating risk factors in achieving this outcome. -The ACNP practices in any setting, focus on a variety of specialty based populations and specialty-based area of practices, in which patient care requirements, complex monitoring and therapies, high intensity nursing intervention, or continuous nursing vigilance within the range of high acuity-care. The Competency of ACNP: I. Health promotion, Health Protection, Disease Prevention, and Treatment I.A. Assessment of health status I.B. Diagnosis of health status I.C. Plan of care and implementation of treatment II. Nurses Practitioner-patient relationship III. Teaching-Coaching function IV. Professional Role V. Managing and Negotiating Health Care Delivery Systems VI. Monitoring and Ensuring The Quality of Health Care Practice VII. Cultural Competence *The detail of ACNP competency as Table 1

Table5: Analysis and extracted data from Non-research (continued)

Author/ year / country	Type / Level	Title / Extract data
Dorothy Broonten & et. al., 2004 U.S.A.	Article VII	*Quality and the nursing workforce: APNs, patient outcomes and health care costs* **APN and Quality**: Numerous studies indicate that APNs have better and similar patient outcomes in primary care and acute care(Brooten & et.al, 2001; Brown & Grimes, 1995; Mundinger & Kane, 2000) or home care and transitional care. APNs are reimbursed at a lower rate than physicians for the same services result in saving health care costs.Others finding is the combined physician and APN or APN worked with nursing staff (Ryden & et.al, 2000) demonstrated that APN input in care result in significantly greater improvement. - Determining the amount of APN spent time needed to achieve desired patient outcomes. - APN dose has positive effect on patient outcomes and health care costs. -Stakeholders (payers, providers, consumers) view quality indicators differently with some focusing on structure, some on process, and some on outcomes of care. In this article examining quality indicators and workforce, Nurse is the largest group of health care worker. Nursing practices are often absent in databases and systems of reimbursment. Research overwhelmingly indicates equal outcomes to physician and APN care plus value-added ; APN effects on use of preventive services, adjustment to illness, stress management, treatment compliance, satisfaction, and reduced emergency room visits and rehospitalization etc. - Now needed is,first, research to demonstreate on the level of APN dose requirement; specialty area /group, level of severity, level of complexity; the best use of APNs with what mix of staff; the best balance of combined physician and APN dose in each context.
National Association of Clinical Nurse Specialists (NACNS) 2005 U.S.A	Authority or Policy statement VII	*White paper on certification of clinical nurse specialist* -The core competency provides a framework for a first level assessment of core CNS competencies regardless of specialty. -The validation of specialty knowledge would be defined by the specialty organization responsible for professional validation of that specialty. -Assessment of these two essential elements, 1) Measured of core competencies that differentiate CNS practice from the other groups of Advanced practice nurse 2) Use of specialty science in the assessment, diagnosis and interventions with clients served by the specialty, may be done through written examination alone, or a defensible assessment method, such as portfolio validation, conducted by the specialty organization. <u>-Guiding Principles of CNS Certification</u> Accreditation Standards set by the American Board of Nursing Specialties (ABNS), which are bed on the ANA **Standard1**: Definition and scope of Nursing specialty, **Standard2**: Research Based Body of Knowledge

Table5: Analysis and extracted data from Non-research (continued)

Author/ year / country	Type / Level	Title / Extract data
JoAnne Phillipson 2005 U.S.A.	Review article *	*Neuroscience Critical Care: The role of the Advanced Practice Nurse in patient safety* - A culture of safety considers the safety of patients, families, healthcare providers, ancillary personnel, visitors and all who part of a specific institution's environment. - The specific characteristics of "culture of safety" include: acknowledgement that the environment is high-risk and error prone; existence of a blame-free culture; expectation of collaboration across disciplines and hierarchy; and organizational willingness to commit direct resources to address safety concerns. Factors contribute to the occurrence of errors are: # Communication, poor communication can create unhealthy environments and increase potential patient harm. CNS: are expert communicators and role modeling the SBAR model of communication help the staff understand and can collaborate to develop educational role –playing opportunities using SBAR. # Inadequate flow of information CNS: create a tool to ensure consistent exchange of information, the tool may be web-based depend on the hospital's information technology infrastructure and must be evaluated effectiveness by all who involved in the patient's care. # Human problems CNS: a key role is in the design, implementation, and evaluation of policies and practice changes, introduced new technology and patient management strategies, is expert in assessing the current practice and evaluating the need for the development of educational resources to introduce new technology and change practice. # Patient related issues, Improper identification, and incomplete patient assessment increased risk. # Organizational transfer of knowledge, staff pattern/workflow, Technical failure, Inadequate policies/procedures. CNS: develops orientation programs based on unit specialization, ensure all staff are competent to care for the special needs of the neuroscience patient population, concern one of the key skills in which neuroscience nurses demonstrate expertise is in performing a complete neurological assessment. **The role of The APN:** The neuroscience APN fulfills an unmet potential to influence patient care outcomes. The APN expert primary influence on patient safety through direct interaction with staff and patients, as a board catalyst for change and integrate knowledge of patient safety into evidence-based interventions to improve outcomes. -The role of APNs, neuroscience critical care, in establishing and maintaining a culture of patient safety; advanced neurological assessment, decreasing complication e.g. DVT, developing APN-led of DVT prevention program - The APN competencies of clinical expertise, leadership, collaboration, planning, insight and analysis, communication skills, critical thinking, problem solving and bring unique characteristics; independent, interdependent and most importantly synergistic to success of patient safety initiative to provide patient safety.

Table5: Analysis and extracted data from Non-research (continued)

Author/ year / country	Type / Level	Title / Extract data
Younhee Kang 2005 Korea	Article VII	*Development of advanced practice nurse in South Korea* -In Korea 10 specialized area of nursing have been established by the Medicine Law, 2003; public health, anesthesia, mental health, home care nursing, gerontological nursing, critical care nursing, industrial nursing, hospice, emergency nursing, and infection control. Education for advanced practice nurses is the MSN level. -The impetus forn these extended special nursing area was 1) the rapid growth of elderly population. 2) Increasing health-care costs. 3) Changing in types of disease and increasing life expectancy. 4) Shortage of general medical doctors, the number of medical residents will be limited by the government so that APNs are needed to make up. 5) Need for emergency health-care services in the event of disasters either natural and man-made. -The Ministry of Health and Welfare of Korean specified the Law for APNs in 2003. Applicants apply for the certificate examination if they have at least 3 years of clinical experience in one of the specialized areas within the last 10 years and complete a specialized educational program,graudate schools certified by the Ministry of Health and Welfare.They are licensed by first passing a written test and then an interview or practice test. The first APN certification examination will be offered in 2006. -The Development of advanced practice nurse in South Korea has occurred and initiative period all aspects result from health care needs of society, government policy and support. Several problems still remain and challenge to be solved.
Pamela A. Minarik & Brenda Lyon 2006 U.S.A.	Article VII	*Competence Assessment and Competency Assurance of Health Care professional* -Competence assessment and competency assurance of healthcare professionals are old concerns with new urgency. Patient safety and error prevention priorities place competency of healthcare professionals in a spotlight. Globally, healthcare providers' regulation, safety, and quality are greater concerns with international migration of healthcare providers. -It's necessary to set not only competence standards for entry to practice but also require to demonstrate throughout their career, Lyon & Boland defined domains of competence as knowledge ,technical, cultural and communication competence. -Certification examination are not available for many existing and emerging specialty practice areas, are small and developed of a valid exam too costly. So tools for competence assessment and competency assurance are developed for regulated, validate and reliable.

Table5: Analysis and extracted data from Non-research (continued)

Author/ year / country	Type / Level	Title / Extract data
Jill Howie-Esquivel & Dorrie K. Fontaine 2006 U.S.A	Review article *	*The evolving role of the acute care nurse practitioner in critical care* -Most countries are experimenting with expand role of ACNP in critical care to improve quality of care in hospital and the health care system. **In U.S.A**.: ACNP provides quality patient & family care outcomes e.g. Improves patient/family's satisfaction, cost effectiveness; decrease the hospital's shortage of residents with new restrictions on working hour problem. - in 2005(Kleinpell), survey research study revealed 85% most of their time is spent in the role of clinician, practice in tertiary-care settings including intensive care unit, and increase in specialty-based and collaborative practice settings, is a team leader in rapid response team to reduce the number of cardiopulmonary arrests outside the intensive care unit, improve inpatient mortality rates. Researches support that ACNP influenced care outcomes such as LOS, costs, readmission rates, complication decreasing (rates of UTI and skin break down) - Others of ACNP care outcomes are management of mechanical ventilation, collaboration and continuity of care. -ACNP practice, however, depends on the job description and the setting/ acuity for the patient. - Specialized skills are not acquired until after an ACNP is employed for a particular position. **Global perspective and future trend** (focus in intensive care unit) indicate that ACNP's roles, education, scope of practice and accountabilities may vary but show similar patterns for use of advanced practice nurses because of increased of acuity of patients, the changing healthcare environment, finances, roles, shortages of team members and outcomes. **In Canada**: Qualitative study (Van Soeren MH. & Micevski V., 2001) revealed the most important factor for success of ACNP role implementation was the level of educational preparation. Since 1994, Canadian ACNP education has been situated within a master's degree program or postmaster's program. Barriers varied by discipline 1) ACNP believed that lacking of mentorship.2) Physicians identified lack of knowledge. 3) Administrators thought lack of administrative support impeded the role **In United Kingdom**: Delphi study on the role of NP found NP is in need of a job description. **In Netherlands**: NP positions require a master's degree in advance nursing practice. **In Australia**: Projects in regional, rural and remote area found that NP provided safe, effective, and quality healthcare. **In Singapore**: The First, Advanced Practice Nurse program was offered in 2003.All graduates are employed in inpatients with several in critical care. **In Taiwan,** Qualitative research, with 10 ACNPs, revealed the stresses of role transition phase of new graduates are oriented in a medical center.

Table5: Analysis and extracted data from Non-research (continued)

Author/ year / country	Type / Level	Title / Extract data
Janet S. Fulton 2006 U.S.A.	Article VII	*Disseminating Outcomes of Clinical Nurse Specialist Practice* -Dissemination is a CNS core competency identified by the National Association of CNSs. In the patient-Client sphere, it means sharing outcomes related to innovative nursing interventions; in nursing-nurse sphere, it means sharing outcomes of changes in nursing practice standards; and in system sphere, it means sharing outcomes of system wide initiatives. CNSs take responsibility for becoming proficient in outcome disseminations, include research and non research. -It's necessary for CNSs to build, sustain, and develop communication's skills for disseminating practice outcomes.
Cynthia E. Umbrell 2006 U.S.A.	Article VII	*Trauma Case Management: A role for the advanced practice nurse* -The care of critically ill trauma patients is complex and requires the expertise and skill of many health care providers. Delays in injury identification and the development of a treatment plan without considering comorbid conditions impede the patient's resuscitation and recovery from the acute injury delay the rehabilitative phase and increase costs. To assist the bedside nurse and the medical team, An advance practice nurse in the role of a trauma nurse case manager (TNCM) will promote a consistent approach to quality care and enhance the functional outcome of the trauma patient in a timely manner. - **Competency of TCNM**: expert clinician, excellent communicator, and respected educator, critical thinking & judgments and problem-solving. * guiding and promoting medical and allied team collaboration for patient's care plan, discuss the appropriate treatment plan, addressing the specific care requirements, identifying missed injuries and minimizing the opportunity for complications. Such as nosocomial infections, invasive line and tube remove medication error. *providing bedside nurse education, would develop an environment of continuous learning and mentoring, and patient & family member education. *Improving quality of care, financial, streamline resource use/such as LOS in an outcomes-managed group of long term ventilated patients that use protocols, clinical pathways -TCNM for the clinical team includes continuity of care, an expert clinical resource and a positive role model. -**The effective outcome** from TCNM; Patient safety, prevent delays in care, cost effectiveness, a shorter LOS, satisfaction.

Result and Discussion

In this study, all of 46 empirical evidences were complied, analyzed, and synthesized. The outcomes were categorized as per the characteristics of evidence proposed above. Following were analyzed and synthesized outcomes as ordered and sorted by subjects according to the objectives of this study:

1. The Competency of clinical nurse specialist for patients in critically ill.

There is evolution of clinical nurse specialist in health care system for a long time, and development of competency standards for clinical nurse specialist was also on the way of this road whether response to health care needs in the context. According to the review of empirical evidences, it was found that we need many competencies of clinical nurse specialist, which effects to standard /superior of care outcomes. The competency of clinical nurse specialist was classified in two domains:

1.1 Nursing standard competency. It consists of follow this:-

1.1.1 Assessment

To collect data relevant to 3 spheres of influence: the patient and family members, nursing personal and organizational systems.

To conduct comprehensive, holistic wellness and illness assessments by using known or innovative evidence-based techniques, tools, and methods to obtain data about context such as disease, culture, and age-related factors; etiologies (including both non disease and disease-related factors) necessary to formulate differential diagnoses.

To identify the need for new or modified assessment methods and data on the target population prior to designing new programs.

To assessment of the specialty should include attention to the following special considerations specific to group.

To use/design methods and instruments to assess patterns related to nursing practice outcomes within and across units of care.

To assess knowledge skills and practice competencies of nursing personnel to advance the practice of nursing.

To identify needed changes in equipment.

To substantiate desirable and undesirable patient outcomes linked to nursing practice.

To identify facilitators and barriers to implementing nursing practices that influence nurse-sensitive outcomes.

To assist nurses and nursing personnel and change practice norms and standards to ensure comprehensive assessment.

1.1.2. Diagnosis

To analyze the assessment data to determine the needs of patients, family members, nursing personnel, and organizational systems.

1.1.3. Outcome Identification

To identify expected outcomes for patients, family members, nursing personnel, and organizational systems.

1.1.4. Planning

To develop and facilitates a plan that prescribes interventions to attain the expected outcomes for patients, family members, nursing personnel, and organizational systems.

1.1.5. Implementation

To effectively implement the interventions identified in the plan(s) for patients/family, nursing personnel, and organizational systems.

1.1.6. Evaluation

To evaluate progress toward attainment of expected outcomes for patients, family members, nursing personnel, and organizational systems.

In nursing standard competency, clinical nurse specialist as an expert clinical practice/practitioner. Expertise in a specialized area of nursing clinical experience and additional equip the nurse with the skill to synthesize from a board range of nursing, based on theoretical, scientific knowledge in the area of practice to achieve holistic, integrated complex, critical and comprehensive health care in partnership with the client, family members, other health care professionals and health care team members. However the evidence has shown the competency standards is divided into elements illustrated with performance criteria that show in the table2.

The critical care clinical nurse’s competency from the organizations, and widely applicable in all area of the critical care for patients in critically ill, but the performance criteria are specific to the unique clinical setting (Sandra, & et al., 2000), e.g. the care of critically ill trauma patients is complex and requires the expertise and

skill of many health care providers. Delays in injury identification and the development of a treatment plan without considering comorbid conditions impede the patient's resuscitation and recovery from the acute injury delay the rehabilitative phase and increase costs. Early detection and appropriate (quick) monitoring can improve the quality of care in critically ill trauma patients (Ong & et. al. 2002). The study of Ulvik & et.al. (2007) found SAPII was a useful predictor may enable to identify, at early stage, trauma patients at the high risk of death, moreover, more attention to be given in order to further reduce the mortality rate and improved risk assessment may also be useful for identification of unexpected non-survivors during the first 30-days.

To assist the bedside nurse and the medical team, an advance practice nurse in the role of a trauma nurse case manager (TNCM) will promote a consistent approach to quality care and enhance the functional outcome of the trauma patient in a timely manner (Umbrell, 2006).

To improve quality of care the neurosciences APN assessed the factors that contribute to the occurrence errors then develops orientation programs based on unit specialization, ensure all staff are competent to care for the special needs of the neuroscience patient population, concern one of the key skills in which neuroscience nurses demonstrate expertise is in performing a complete neurological assessment and develops DVT prevention program, decreasing complication (Phillipson, 2005).

1.2 Professional competency

1.2.1 Quality of care

To systematically develops criteria for and evaluates the quality of nursing practice and organizational systems. Clinical nurse specialist initiates and collaborate multidisciplinary team to develop research-based care, protocol and empower them to become best practice (Kozik. 2007).

1.2.2. Individual practice evaluation/ Clinical Leadership / Team leader

To evaluate his or her practice in relation to professional practice standards and relevant regulations.

To initiate, develop, participate in standard of practices/cares and to contribute the professional development of peers, colleagues and others.

Clinical judgments and leadership, direct and indirect care, aiming for an effective management of the complex health problems of patients and improve the quality of care (FitZgerald & Wood, 1997)

1.2.3. Education /Teaching-Coaching / Mentoring skill

To acquires, maintains current knowledge, competency and demonstrate leadership through teaching, coaching, guiding, mentoring to complex acute, critical, chronically-ill and healthcare team with effective communication in the 3 spheres of influence in acute and critical care nursing. In addition, a CNS mentor can enhance the skills and interpersonal behaviors of the novice CNS through mutual sharing of experience and knowledge, both of the mentor and the novice may be effectiveness by enhanced self-esteem, professional productivity and value to the situation (Gawlinski. 1994, p36).

. 1.2.4. Collegiality

To contribute to the professional development of peers, colleagues and others. Workplace environment stimulate competency development (Lindberg, 2006) and in healthy work environment is one “in which policies, procedures and system are designed so that employees are able to meet organizational objectives and achieve personal satisfaction in their work” (Simonnowitz, 1996 cited in Disch & et.al. 2006). From the literature review showed that clinical nurse specialist can create or shape work environment in critical care unit that not only allows the patients and families to receive quality of care but also foster collegial, respectful, and enjoyable relationships among caregivers and between health team members in health system (Disch & et.al 2006).

1.2.5. Ethics. / Ethical decision- making / Advocacy

To decision and action are made on behalf of patients and their family members, nursing personnel, and organizational systems and are determined in ethical manner. As advocate, protecting the patient’s rights who are involve in research studies because patients are critically ill and may be unable to advocate for themselves (Scherer & et. al., 1994). Several strategies can be used with a clinical ethical dilemma, daily bedside collaborative round, and ethic round/consultant. It is important that there is not a right answer but there will be a best answer for each patient and

situation (Gawlinski. 1994, p162). An increasing healthy environment can decrease interpersonal conflict & the ethical dilemmas (Disch & et.al. 2001).

1.2.6. Collaboration

To collaborate with patients and their family members and healthcare personnel in creating a healing and caring environment. True collaboration is a process, not an event. It must ongoing and build overtime, resulting in a work culture where joint communication and decision making between multidiscipline (AACN, 2005, p20). As collaborator, promoting a collaborative relationship in work environment and partnership of team (Scherer, Jezewski, Janelli, Ackerman & Ludwig, 1994). Nowadays, The trend toward increasing specialization in critical care unit, critical care clinical nurse specialist have also specialized in the care of specific patient populations, population-based clinical nurse specialist have enter to joint practice arrangements with physicians where each contributes unique skills and perspectives, increasing the quality of patient care and enhancing professional satisfaction (Gawlinski 1994, p60). Physician have recognized the expertise nurses in advanced practice and facilitating collaborative effort too.

1.2.7. Research/ Clinical inquiry

To utilizes, participates in, and disseminates research to enhance practice. Clinical inquiry as most critical for clinical nurse specialist as clinical judgments in research conducts to practice. (Becker 2006). In the quality improvement project base on research utilization as case report, an older-smoker with diabetes type 2 who had cardiac arrest and post cardiopulmonary resuscitation was provided the “hypothermia-protocol” and was discharged home to his family’s care had not neurological deficit (Kozik, 2007).

1.2.8. Resource utilization

To influences resource utilization in order to promote safety, effectiveness, and fiscal accountability in the planning and delivery of patient care. Advanced nurse practice promotes efficient use of resources and provision of quality care to achieve optimal cost-effective outcomes. As in the role of trauma case manager guide and promote medical allied team collaboration for patient’s care plan, discuss the appropriate treatment plan, address the specific care requirements, identifying missed injuries and minimizing the opportunity for complications. Such as nosocomial

infections, invasive line and tube remove medication error (Umbrell, 2006). Demonstrated a decrease in the occurrence deep vein thrombosis and a trend towards decreased trauma patient morbidity, unplanned admissions to the intensive care unit and operating suite. A reduced length of hospital stays, especially in 45-64 years age group, and appropriate / coordinate service that meet needs of patient and family from multidisciplinary team for streamline care(Curtis & et al., 2006).

1.2.9. Consultation / networking

To provide expert consultation for nursing staff, other health care professional, also networking by implementing improvements in health care practice and delivery, increasing technology and scientific advanced impacting in practice and the need to keep current. Benefits of networking is also, gaining valuable information, learning new ways of doing things, getting important feedback, psychological support, expanding career opportunities, establishing a list of resources, opening door to publishing and speaking, impacting policy changes and driven clinical nurse specialist to become more involved with research (Gawlinski 1994, p262).

1.2.10 Interpersonal Communication skills

The evidence shown that the competent interpersonal communication skill in acute care setting-ICU transition or in discharge process, make care coordination e.g. determine plan of care before admission. perform unit activities; participate in patient round with health care team, assess and implement, review care plan, document nursing interventions, mentor staff. Evaluate streamline nursing interventions; monitoring nurse frequency of nursing tasks, assess teaching plan, and establish a nursing plan for patient progression. Collaborate with management team to evaluate practice change, these make more positive outcomes. (Counsell & Gilbert, 1999). In addition to unambiguous communication supports optimal patient care and maximal team function (Richmond & Becker, 2005). Study revealed that a key attribute of the advanced nurse practitioner in outcome manager role is communication with team; identify patient needs, immediate intervention and appropriate decision (Burns & Earven, 2000). Intimidating behavior and deficient interpersonal relationships lead to mistrust, chronic stress and dissatisfaction, this unhealthy situation contributes to leaving in positions and profession (AACN 2005, p16).

1.2.11Critical thinking

To diagnose and treatment/intervene of actual or potential problems within in specialized area. To encourage staff to think critically and participate in the plan of care in a more active manner and decision making in care coordination/continuum care (Counsell & Gilbert, 1999).

1.2.12Clinical decision-making

The delivery of health care is a complicated system that requires those involved to pursue problems, actual or potential, with innovative creative solutions. Clinical nurse specialist / advanced practice nurse must learn to think critically and be able to provide input into solving complex, critically, health care issues when this competency is lacking, it's difficult to be taken seriously by other colleagues (Hockenberry-Eaton & Kennedy, 1996). She / he demonstrates rapid decision making for efficient matching of demands and resources to resolve clinical and professional issues. CNS/ APN serve as resource person to facilitate problem solving and decision-making skills, in direct care patient or evaluate planned change and modified, to members of health care teams (Scherer & et. al., 1994)

1.2.13Innovative

Dissemination is a core competency identified by National Association of Clinical nurse Specialists. In the patient-client sphere, it means sharing outcomes related to innovative nursing intervention. In nursing-nurse sphere, it means sharing outcomes of change in nursing practice standards. And in system sphere, it means sharing outcomes of system wide initiatives (Fulton, 2006).

1.2.14Information and Healthcare Technologies competency

Poor communication can create unhealthy environments and increase potential patient harm. Clinical nurse specialist create a tool to ensure consistent exchange of information, the tool may be web-based depend on the hospital's information technology infrastructure and must be evaluated effectiveness by all who involved in the patient's care. Furthermore to assess the current practice, evaluate the need for the development, design, implementation, and evaluation of policies and practice changes, introduced new technology and patient management strategies, (Phillipson, 2005).

Mostly evidences has presented that clinical nurse specialist have to continuously developed both of nursing competency and professional

competency/characteristics or attribute that leading to superior performances. And further more successful in clinical nurse specialist practice development was her or his behaviors e.g. respect, rapport, flexible, confident, honest, willing to take risk, listening, validating, providing, receiving feedback, and conveying ideas, critical thinking, decision making, changing (Davies & Gughes, 2002, Sievers & Wolf, 2006). commitment, thoroughness, persuasiveness, compassion, comforting, self control and responsiveness(Zhang, 2001). In the study of Zhi-Xue Zhang (2001) was found that interpersonal understanding is the most important characteristic for good nursing performance and a characteristic leading to incompetent performance is self-control.

Educational environment teach and model interdisciplinary collaboration as a means to improve quality of care and patient safety related to interdisciplinary clinical experiences offer clinical nurse specialist and healthcare provider opportunities to develop needed collaboration and communication skills which better prepare them for their roles and essential characteristics in a clinical setting (Sievers & Wolf, 2006).

The competency assessment and competency assurance of health care professionals are old concerns with new urgency. Patient safety and error prevention priorities place competency of health care professionals in a spotlight. Globally health care providers' regulation, safety and quality are greater concern, so it is necessary to set not only competence standards for entry to practice but also require demonstrating throughout their career (Minarik & Lyon, 2006).

In Thailand, the challenge factors to advanced practitioner nurse development have similarly in the literature review; health care needs, increase patient acuity, complexity and high technology care, new emerging or disaster, change in cost containment, government policy even globalization and Trade free, in addition to nurse and health care providers were shortage. So Thai Nursing Council has established education and training APN program preparation and certified advance practice nurse since 2003. As unofficial monitoring of certified APN, the problems were found some APN can not take actions or unable use their competency to improve care outcomes, the other lack of care outcome evaluation which influence to identify career path or clarify in job's position that is unable to develop their higher level of competency. On 20 January 2008, "The training program and knowledge APN certification examinations committee", Thai Nursing Council, has conducted and

consensus “The scope of practice and the competency for advanced practice nurse” in 9 specialty area (Legally in process). This is an accreditation standard and credentials, a tool for CNS/APN competency measurement and development. Credentialing of specialist practice has been proposes as a strategy to ensure optimal care is provided to the health care consumer, enhance the level of nursing practice, recognize and reward excellence and support professional regulation (Sandra & et.al., 2000). However, there are many factors to competency development that the researcher concerns.

Key factors affecting the success of CNS/APN competency development:

1) CNS/APN

Clinical nurse specialist has to continuously develop both of nursing standard competency and professional competency/characteristics or attributes that leading to superior performances. As an expert clinical practitioner in advance level, she/he was acceptable from patient/ family, health care providers and staff, And further more successful in clinical nurse specialist practice development was her/his behaviors e.g. respect, rapport, flexible, confident, honest, willing to take risk, listening, validating, providing, receiving feedback, and conveying ideas, critical thinking, decision making, changing (Davies & Gughes, 2002, Sievers & Wolf, 2006). And one challenging aspect was balancing the work and multiple demand of time for self-directed learning, designate for research, sharing knowledge and providing education/professional etc.

2) Policy/ organization resource

Supportive resources for CNS implementation, definition and clarification CNS role / performance indicators.

3) Profession organization

Collaborative with University, Nursing organizations and who relate to CNS education preparation entry to high career.

2. The care outcomes of clinical nurse specialist practice with critically ill patients

The objective two of the study with end to find out the care outcomes of the clinical nurse specialist in critically ill patients. The investigator reviews the outcome 17 researches and 7 articles. The importance of evaluating outcomes of care has been evident throughout history. Outcomes are defined as the end result or consequence of treatment or intervention, it is evaluating across in the continuum of care, classified in

5 areas. 1) Clinical outcome 2) Psychological outcomes 3) Functional outcomes 4) Fiscal outcomes 5) Satisfaction (Urden, 20001). And impact in 3 spheres; patient/client, nurse/nursing practice, organization/system (NACN, 2004).

As we know critically ill patients who were complexity, high acuity, required a comprehensive approach and competent clinical nurse specialist for meet health care needs. The clinical nurse specialist, as an expert practitioner with an advanced knowledge- base, is accountable for promoting and upholding standards of care and practice. so outcome evaluation has done by single case or diagnostic populations, and also evaluate clinical practice through leading or participating in interdisciplinary teams, such as quality improvement team or outcome management team (Urden, 2001) etc..

17 from 24 researches and 7 from 22 non-researches (Table.4 and Table.5 as proposed) showed the impact of clinical nurse specialist / advanced practice nurse on outcome of care has been well documented in the literature reviews. e.g. clinical nurse specialist is a key position and need competent to influence the care of patient that lead to positive outcome; orthopedic patients on unit-based clinical nurse specialist decreased total length of stay, decreased mortality rate, reduced complication, reduced health care cost and health care utilization, improved quality of care by sending patients to rehabilitation unit which become independent in their ability to transfer from bed to chair earlier (Wheeler, 1999). Advanced nurse practitioner as an outcome manager, use outcome-management model, improve complex neuroscience population by identify patient at risk, closely monitoring complication and having a consistency advanced practice nurse to guide and manage the care cause to decrease cost, length of intensive care unit / hospital stay, reduce complication; skin breakdown, urinary tract infection, pneumonia, etc.(Russell & et. al., 2002).

The comparison management of patient in intensive care unit between acute care nurse practitioner and physician in training revealed that acute care nurse practitioner spent more time interacting with patient, family, nursing staff and collaborated with other health care team members' effect to quality of care, enabling continuing care, increased attention to issues of patients and patient's families, increasing teams relationship, promoting team approach so reduce complication rates, shorten length of stay, reduce costs and greater meet needs (Hoffmann & et.al.,2003).

Use physician and a clinical nurse specialist focused on improving communication, early, frequent, consistency by palliative team in ICU can support families' end of life decision, with patient and patients' families make a better outcomes; reduce length of stay and reduce resource utilization (Ahrens & et.al, 2003).

Advanced nurse practitioner as a team leader in rapid response team to reduce the number of cardiopulmonary arrests and improve inpatient mortality rates (Esquivel & Fontaine, 2006). Advanced practice nurse as a team leader collaborate multidisciplinary team use quality improvement through evidence best practice by ventilator weaning protocol/ clinical practice guideline implementation among surgical intensive care unit can revealed that reducing length of stay, weaning time, ventilator day and decreasing cost and in the process outcome make more satisfaction in team approach (Wasee, 2006; Mclean & et.al.,2006). Jill & Michael (2002) mentioned, literature review indicated that ACNP worked at hospital in various setting, emergency department fast track, neonatal intensive care unit, university hospital, surgical service/neurosurgical ICU, inpatient and outpatient service, trauma service, medical service and finding quality care outcomes from ACNPs; as follow

-care comparable to provided by house staff more cost-effectiveness by decreased LOS

-Improved access to care

-less costly care, decreased laboratory costs

-Patients' satisfaction, decreased complaints

-Improve documents

-Minimized surgical delays

-Better continuity with inpatient/outpatient care, decreased fragmentation of care

-Individualized care

-Decreased LOS for seriously injured patients

-Decreased waiting time

-Increased interactions between physicians and nurse

-Enhanced roles of nurse in clinical decision, making and evaluation

-Time saving for house staff, favorable ratings by house staff

-Good collaboration between nurses, practitioners/physicians, other providers.

-Acceptance by patients and families

And this valuable Medical center, University of California created ACNP-hospitalist framework of care and finding ACNP create the ideal team situation, taking advantage of the strengths of all members on a medical service.

Nursing standard competency and professional competency affecting outcomes in critically ill patients

Competency	**Care outcomes**
Nursing standard competency	Decrease mortality rate, Decrease morbidity rate Decrease complication, Decrease LOS, Decrease waiting time Decrease resource utilization, Decrease cost Cost effectiveness, Increase Functional outcomes, Enhance clinical decision. making and evaluation Patient safety Patient/family satisfaction Recognizes by healthcare providers staff satisfaction
Professional competency	
-Quality of care	Quality improvement
-Leadership	Decrease mortality rate, Decrease morbidity rate
-Education/teaching/coaching/ mentoring skills	Decrease complication, Decrease LOS, Decrease waiting time
-Collegiality	Decrease resource utilization, Decrease cost
-Ethics/Ethical decision-making /advocacy	Cost effectiveness, Increase Functional outcomes, Increase interactions between nurse-physician,
-Collaboration	Team approach, Team collaboration
-Research/Clinical inquiry	Continuum care
-Consultation/ networking	Patient safety, error prevention,
-Interpersonal skills	Patient safety culture
-Critical thinking	Create healthy environment, friendly culture

Nursing standard competency and professional competency affecting outcomes in critically ill (continued)

Competency	Care outcomes
-Clinical decision-making	Professional satisfaction
-Innovative	Competent staff development
-Information and healthcare technology information	

CHAPTER IV
CONCLUSION AND RECOMMENDATION

Conclusion

This study related the analysis of all types of empirical evidences concerning the competency of clinical nurse specialist and the care outcomes of clinical nurse specialist practice with critically ill patients in health care delivery service or system. The literature review has been done systematically based on the process of Whittemore & Knafl (2005). They comprised of many academic documents, e.g. published researches, articles, opinions of experts, the authority or policy statement from nursing organizations, manuals, textbooks, and literature searched from Mahidol University library, electronic database, and web-based from unlimited - 2007. All those empirical 46 evidences were 24 researches, and 22 non-researches.

The instruments in this study included the table analyzing the empirical evidences, and the table extracting the data from each type of empirical evidences. All data was collected by reading carefully, and recording it into the table analyzing the empirical evidences. All data concerning the competency of clinical nurse specialist and the care outcomes of clinical nurse specialist practice with critically ill patients was analyzed carefully. The data, then, was extracted and sorted by type of empirical evidences and summarized extracted data according to objectives of this study.

The results of analyzing empirical evidences obtained from the analysis of the competency of clinical nurse specialist and the care outcomes of clinical nurse specialist practice with critically ill patients could be summarized follow this;

1. The Competency of clinical nurse specialist for patients in critically ill consists of two domains as follow:

1.1 Nursing standard competency

1.1.1 Assessment

To collect data relevant to 3 spheres of influence: the patient and family members, nursing personal and organizational systems

1.1.2. Diagnosis

To analyze the assessment data to determine the needs of patients, family members, nursing personnel, and organizational systems.

1.1.3. Outcome Identification

To identify expected outcomes for patients, family members, nursing personnel, and organizational systems.

1.1.4. Planning

To develop and facilitates a plan that prescribes interventions to attain the expected outcomes for patients, family members, nursing personnel, and organizational systems.

1.1.5. Implementation

To effectively implement the interventions identified in the plan(s) for patients/family, nursing personnel, and organizational systems.

1.1.6. Evaluation

To evaluate progress toward attainment of expected outcomes for patients, family members, nursing personnel, and organizational systems.

1.2 Professional competency

1.2.1 Quality of care

1.2.2. Individual practice evaluation/ Clinical Leadership / Team leader

1.2.3. Education /Teaching-Coaching / Mentoring skill

1.2.4. Collegiality

1.2.5. Ethics. / Ethical decision- making / Advocacy

1.2.6. Collaboration

1.2.7. Research/ Clinical inquiry

1.2.8. Resource utilization

1.2.9. Consultation / networking

1.2.10 Interpersonal Communication skills

1.2.11Critical thinking

1.2.12Clinical decision-making

1.2.13Innovative

1.2.14Information and Healthcare Technologies competency

2. The care outcomes of clinical nurse specialist practice with critically ill patients

Outcomes are defined as the end result or consequence of treatment or intervention; it is evaluating across in the continuum of care, impact in 3 spheres; patient/client, nurse/nursing practice, organization/system, classified in 5 areas. (Urden, 20001).

1) Clinical outcome
2) Psychological outcomes
3) Functional outcomes
4) Fiscal outcomes
5) Satisfaction

17 from 24 researches and 7 from 22 non-researches showed the impact of clinical nurse specialist / advanced nurse practitioner on outcomes of care has been well documented in the literature reviews.

The clinical nurse specialist is a key position and need competent to influence the care of patient that lead to positive outcomes. decreased total length of stay and length of intensive care unit / hospital stay, decreased mortality rate, reduced health care cost and health care utilization, reduce complication; skin breakdown, urinary tract infection, pneumonia, Improved access to care, improve documents, decreased fragmentation of care, decreased complaints, enhanced roles of nurse in clinical decision, making and evaluation, time saving for house staff, decreased waiting time, minimized surgical delays.

The comparison management of patient in intensive care unit between acute care nurse practitioner and physician in training revealed that acute care nurse practitioner spent more time interacting with patient, family, nursing staff and collaborated with other health care team members' effect to quality of care, enabling continuing care, increased attention to issues of patients and patient's families, increasing teams relationship, promoting team approach.

Advanced practice nurse as a team leader collaborate multidisciplinary team use quality improvement through evidence best practice by ventilator weaning protocol/ clinical practice guideline implementation among surgical intensive care unit can revealed that reducing length of stay, weaning time, ventilator day and decreasing cost and in the process outcome make more satisfaction in team approach.

The competency of clinical nurse specialist and the care outcome in critically ill patients: 46 evidences supported these issues and led to a conclusion as follow:-

Nursing standard competency and professional competency are affecting outcomes in critically ill patients

Competency	Care outcomes
Nursing standard competency	Decrease mortality rate, Decrease morbidity rate Decrease complication, Decrease LOS, Decrease waiting time Decrease resource utilization, Decrease cost Cost effectiveness, Increase Functional outcomes, Enhance clinical decision. making and evaluation Patient safety Patient/family satisfaction Recognizes by healthcare providers staff satisfaction
Professional competency	
-Quality of care	Quality improvement
-Leadership	Decrease mortality rate, Decrease morbidity rate
-Education/teaching/coaching/ mentoring skills	Decrease complication, Decrease LOS, Decrease waiting time
-Collegiality	Decrease resource utilization, Decrease cost
-Ethics/Ethical decision-making /advocacy	Cost effectiveness, Increase Functional outcomes, Increase interactions between nurse-physician,
Collaboration	Team approach, Team collaboration
-Research/Clinical inquiry	Continuum care
-Consultation/ networking -Interpersonal skills	Patient safety, error prevention, Patient safety culture
-Critical thinking -Clinical decision-making	Create healthy environment, friendly culture Professional satisfaction
-Innovative	Competent staff development
-Information and healthcare technology information	

Recommendations

The critical care clinical nurse specialist competency and care outcome of practice with critically ill patients that reviews in this study has been used to a guideline.

1. The educational preparation and development

1.1. Guiding the future curriculum or educational model development. It is important that nursing standard competency, foundation competency must be integrates as well as including professional competency for clinical nurse specialist to effective function/performance.

1.2. Guiding in process evaluation to recruit students for CNS/APN education and training program.

2. The professional career path preparation and development

2.1. Guiding to design preparation clinical nursing specialist into human resource planning for strategy setting.

2.2 Guiding to competency and performance evaluation system, including the direction of career path/or succession plan.

2.2.1 Nursing standard competency develops to competency evaluation of entry clinical nurse specialist.

2.2.2 A guideline that process is leading to clinical nurse specialist's self development, entry-to-practice into higher level or advanced-to-practice, and clinical nurse specialist's team development.

2.3. Guiding to develop dynamic, innovation workforce planning strategies staffing skill-mix team, which describe how difference functions of CNS and other care provider are in each context. Nursing administrator used to a guideline for planning identification and description of clinical nurse specialist's role, competency, performance and job.

2.4. The outcome evaluation as a direction for policy maker to creating clinical nurse specialist autonomy who has high level competent, autonomy is a key for nurse retention in nursing organization, that the workforce retention plan development. Furthermore, used to proof nursing profession with skilled satisfied to a job is a strategy and negotiation for better position that demonstrate the nursing professional development.

3. The clinical nurse specialist/advanced practice nurse competency's development

3.1 Guiding to clinical nurse specialist used to job development and also to proof her/his performances. In clinical nurse specialist practice: the care outcome is process evaluation and outcome evaluation, an essential component for clinical nurse specialist practice that demonstrates her /his better outcomes.

3.2 The outcome evaluation as a tool for CNS's self development to higher level competent continually.

In the next study, there should be the study of factors and barriers affect the critical care clinical nurse specialist competency development. It is useful to promoting or limiting for competency plan development as the way to improve quality for organization and nursing profession.

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APPENDIX

APPENDIX A

ตารางสกัดงานพิมพ์
(Synopsis table)

ตารางสกัดบทความ

Title (เรื่อง)	
Author (ชื่อผู้วิจัย)	
year (ปีที่พิมพ์)	
Type (ประเภทเอกสาร)	
Level (ระดับ)	
Source (แหล่งตีพิมพ์)	
Setting	
Working Group	
Results (สาระที่สกัดได้)	
Coding (จัดกลุ่มการใช้)	

ตารางสกัดงานพิมพ์
(Synopsis table)

ตารางสกัดงานวิจัย

Title (เรื่อง)	
Author (ชื่อผู้วิจัย)	
Year (ปีที่พิมพ์)	
Type (ประเภทเอกสาร)	
Source (แหล่งตีพิมพ์)	
The purpose of study (วัตถุประสงค์)	
Methodology (ระเบียบวิธีวิจัย)	
Level (ระดับ)	
Method (วิธีการเก็บข้อมูล)	
Setting & Subject (ประชากรและกลุ่มตัวอย่าง)	
Instrument (เครื่องมือที่ใช้)	
Data analysis & Result (การวิเคราะห์ข้อมูล&สาระที่สกัดได้)	
Coding (จัดกลุ่มการใช้)	

APPENDIX B

ตารางวิเคราะห์งานพิมพ์
(Analysis/extract data table)

ตารางวิเคราะห์งานพิมพ์ที่เป็นวิจัย

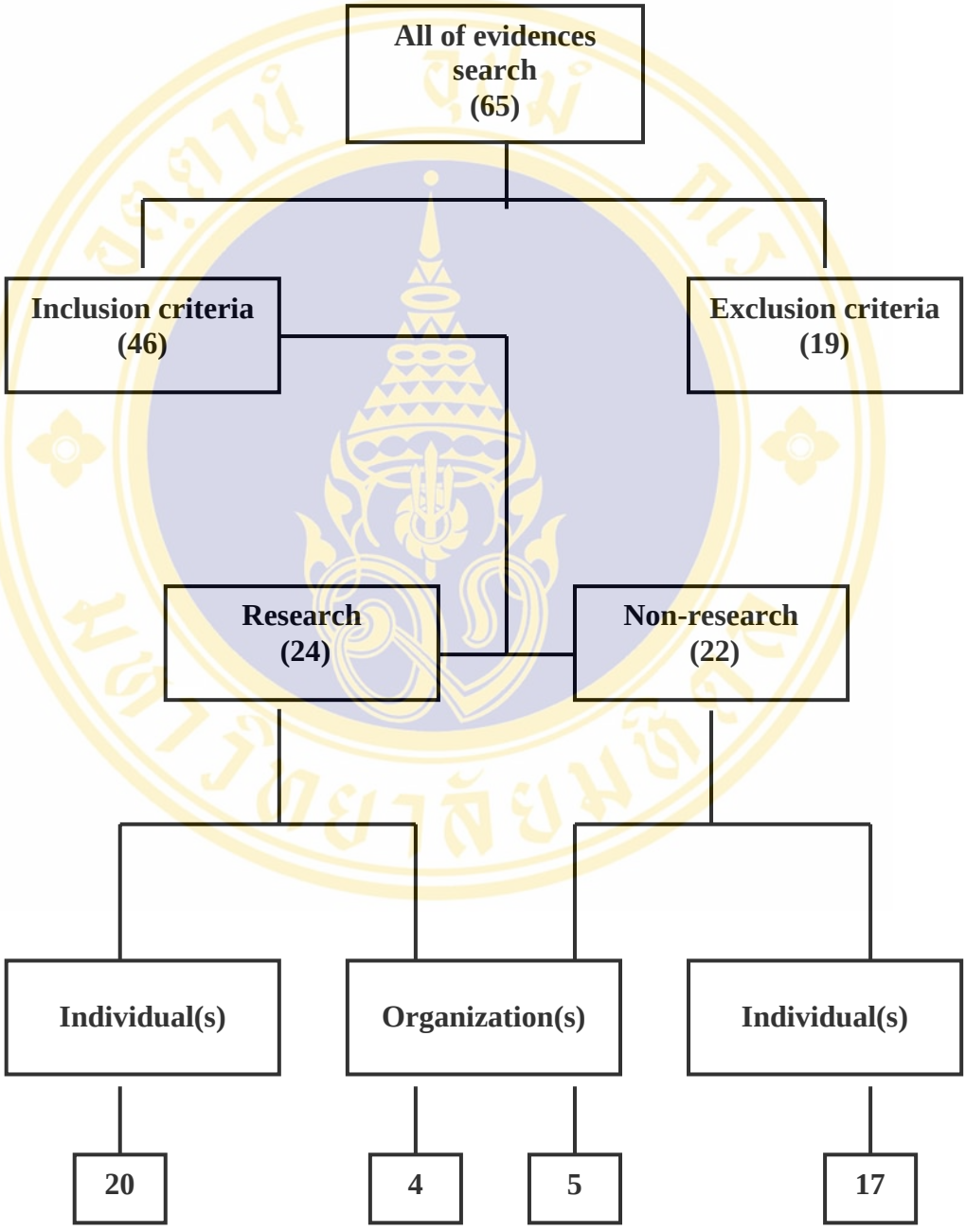
Author/year/level/ country	Method	Subject/ Instruments	Title / Extract data

ตารางวิเคราะห์งานพิมพ์ที่ไม่ใช่งานวิจัย

Author/year/level/ country	Type /Level	Title / Extract data

APPENDIX C

Diagram Search



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