PRACTICE ANALYSIS: ADULT-GERONTOLOGY ACUTE CARE NURSE PRACTITIONER AND CLINICAL NURSE SPECIALIST

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Background Standards for advanced practice registered nurse (APRN) licensure in the United States require certification programs to analyze practice in order to document the knowledge and skills necessary for entry-level adult-gerontology acute care nurse practitioners (AGACNPs) and wellness-through-acute-care clinical nurse specialists (AGCNSs). The practice analysis done every 5 years by the AACN Certification Corporation provides research data for use in establishing test plans for certification of APRNs.

Objectives To describe the development of a survey to collect information on the current practice of AGACNPs and AGCNSs, and to compare the results from practitioners in the 2 roles.

Methods In 2016, a task force of subject matter experts created a survey of the practice activities and competencies of AGACNPs and AGCNSs. Respondents rated activities and competencies according to their applicability and significance to APRN practice. The subject matter experts analyzed the ratings to determine which patient care problems, skills and procedures, and competencies would be included in the updated certification test plans.

Results After analyzing the survey responses, subject matter experts retained 135 patient care problems, 45 skills and procedures, and all national competencies for AGACNPs and 123 patient care problems, 56 skills and procedures, and all national competencies for AGCNSs. Both roles involve several of the same patient care problems, skills and procedures, and competencies.

Conclusions Data from practice analysis surveys formed the basis for developing reliable and valid certification examinations for entry-level APRNs. The information from such studies of practice should inform practicing nurses and students, as well as educators, accreditors, legislators, and regulators, about the work of AGACNPs and AGCNSs. (*American Journal of Critical Care.* 2020;29:e19-e30)

During the past 10 years, one of the most significant external forces affecting the practice of advanced practice registered nurses (APRNs) has been the adoption of the Consensus Model for APRN Regulation.[1,2] The Consensus Model, published in 2008, established standards to regulate the 4 APRN roles: clinical nurse specialist (CNS), certified nurse practitioner, certified nurse midwife, and certified registered nurse anesthetist.

It also defined areas of population focus for APRNs: the family/individual across the lifespan, women's and gender-related health, psychiatric mental health, neonatal, pediatric, and adult–gerontology. For certified nurse practitioners, the pediatric and adult-gerontology populations were divided further into primary care and acute care. Specific to the CNS role, the model delineated competencies that apply across the continuum of wellness through acute care. Clinical nurse specialist practice expanded to include diagnosing and prescribing, which are responsibilities of all APRNs.

The Consensus Model recommends that certification examinations assess competencies of the core role and the population focus. By defining the roles and population foci, the Consensus Model clarified the education and the certification and licensing processes (from titling to assessing competency) and specified that the adult population must explicitly include older adults (gerontology).[1] Clinical nurse specialists are required to pass a certification examination before they begin practicing, which was not a requirement before the APRN Consensus Model. Many APRNs support the adoption of the Consensus Model recommendations, as congruent regulatory language

> This article provides an update and compares the 2016 practice analysis survey results for AGACNP and AGCNS roles.

will, as it expands across the country, reduce barriers to implementing full practice authority. A working group of stakeholder agencies representing licensure, accreditation, certification, and education established 2015 as a target date for Consensus Model implementation.[2] Across the United States, however, the model has not been fully enacted. Educators, accreditors, and certifiers have applied the model and its recommendations, as have many state boards of nursing, but some state regulatory bodies continue to work toward implementation.

The American Association of Critical-Care Nurses (AACN) Certification Corporation incorporated the Consensus Model–recommended revised definitions and standards into their certification processes in 2009. The AACN board of directors took steps to ensure that existing certification programs were maintained for the adult acute care nurse practitioner (ACNPC) and the critical care CNS (CCNS), and the board directed the development of a new series of programs based on the Consensus Model for these APRN roles.[3]

This article has multiple purposes: to review the process the AACN Certification Corporation used to develop and implement the 2016 practice analysis survey; to provide an update on the current practices of adult-gerontology acute care nurse practitioners (AGACNPs) and adult-gerontology CNSs (AGCNSs) based on the 2016 survey results; and to compare the 2016 results for the AGACNP and AGCNS roles. Table 1 provides an explanation of the acronyms used for the CNS and the acute care nurse practitioner (ACNP) in this article.

Results of the practice analysis can be used to inform educators, researchers, legislators, regulators, students, and practicing APRNs and their colleagues about the scope and components of the AGACNP and AGCNS roles.

Background

The AACN Certification Corporation previously conducted 2 practice analyses of the ACNP and CNS roles. The 2006 study[4,5] continued the process from the practice analysis that began in 1990. The 2011 study[6,7] for AGACNPs and AGCNSs was the first

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survey initiated after the Consensus Model had been adopted that provided information on new APRN roles and populations, including the CNS role spanning wellness through acute care.

Professional organizations for APRNs have conducted surveys of ACNPs and CNSs. These surveys validate and inform the analysis of the practice surveys that AACN has used to develop certification examinations. Here we review recent APRN survey data.

Acute Care Nurse Practitioner

Since 2011, the American Association of Nurse Practitioners has conducted 2 surveys of nurse practitioners, and they specifically analyzed the 2012 survey results to report on the growing role of the ACNP.[8] The organization approved an update on acute care practice after the 2016 sample survey analysis.[9] Results of both surveys indicated that the majority of ACNPs (67.2% in 2012, 99.3% in 2016) worked in clinical practice. Demographically, the majority of ACNPs surveyed were women (84.4% in 2012, 90% in 2016) and the mean age was 48 years. The mean time spent practicing as an ACNP was 9.17 years in 2012 and 11.8 years in 2016.[10]

In the 2012 study, the top 3 specialty areas of practice were cardiovascular (26.4%), emergency (11.5%), and pulmonary (6.5%); in 2016, the top 3 areas/roles were cardiovascular care (20.5%), critical care (12.1%), and hospitalist (6.3%). These differences show a change in practice over time.[11,12] A hospitalist is a provider, most often in internal medicine, whom medical institutions employ to provide inpatient services.[13] An important aspect of the hospitalist role is the ability to collaborate and communicate with other members of the care team in order to ensure continuity as the team provides longitudinal care. The emergence of the hospitalist role and ACNPs' expansion into additional subspecialties represents nurses' continued responsiveness to patients' needs.

Clinical Nurse Specialist

Three studies examining the role of the CNS were conducted in 2010,[14] 2014,[15] and 2016.[16] In 2010, the state of California conducted a study to identify CNS practice patterns.[17] The respondents to that study were a median of 49 years old and had practiced as a CNS for a mean of 10 years. At that time, 93.4% of the responding CNSs held a master's degree as their highest degree, and 29.6% of respondents were certified as CNSs. The majority of the CNSs worked in acute care (57.8%), followed

Table 1
Acute care nurse practitioner and clinical nurse specialist acronyms

Acronym	Provider
ACNP	Acute care nurse practitioner
ACNPC	Adult acute care nurse practitioner, certified
AGACNP	Adult gerontology acute care nurse practitioner
ACNPC-AG	Acute care nurse practitioner certified–adult gerontology
CNS	Clinical nurse specialist
CCNS	Critical care clinical nurse specialist
AGCNS	Adult gerontology clinical nurse specialist
ACCNS-AG	Clinical nurse specialist–adult gerontology

by ambulatory care (22.9%), private practice (14.1%), and community settings (11.9%). The large majority of respondents reported spending their time consulting with other disciplines (91%) and with support staff (88%). The 2010 study is informative, but because it was conducted before the APRN Consensus Model was implemented, it is difficult to compare its results with those of subsequent surveys.

In 2014, the National Association of Clinical Nurse Specialists conducted a nationwide survey to determine the employment, education, practice, and demographics of CNSs. They found that 71% of CNSs worked with the adult-gerontology population; 66.5% worked in the hospital inpatient setting, and 44% had responsibilities across the entire health system.[15]

Of those who cared for adult/older adult patients, 25% provided direct patient care, 20% consulted, 19% taught registered nurses, and 14% led evidence-based projects. Only 24.6% of CNSs reported having prescriptive authority (the ability to prescribe, without limitation, legend/controlled drugs, devices, adjunct health and medical services, durable medical goods, and other equipment and supplies). Just 13% billed directly for their services.

The demographic data collected in the 2014 study indicated that 88.3% of CNSs were white and 94.9% were women. Most CNSs (60.5%) held a master of science in nursing degree, 7.5% had a PhD (in nursing or other fields), and 5.9% held a doctorate of nursing practice (DNP). Another 19% had prepared at the master's level but not in nursing.

The most recent (2016) National Association of Clinical Nurse Specialists nationwide survey focused

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Table 2
Responsibilities of the Practice Analysis Task Force[a]

- Define characteristics of the entry-level acute care nurse practitioner or clinical nurse specialist
- Determine a sampling plan for the survey
- Identify patient care problems, skills and procedures, and competencies for the survey instrument
- Determine the rating scales
- Determine the relevant demographic variables of interest
- Compile the definitions, problems, tasks, competencies, ratings scales, and demographics into a survey instrument
- Interpret the data gathered from the survey, which will culminate in the test specifications

[a] Based on information from the AACN Certification Corporation[10,16] and the Institute for Credentialing Excellence.[21]

on identifying the employment, education, practice, and demographics of CNSs.[18] The study results showed that 74.8% worked with the adult-gerontology population. Among those, 79.8% worked in a hospital inpatient setting and 21.8% had responsibilities across the health system.[19]

Among AGCNSs, 22% provided direct care, 19.8% taught nurses, 19.5% consulted for other services, 14.6% led evidence-based practice projects, and 9.1% taught patients and families. A total of 21% had prescriptive authority, and 6.2% reported directly billing for their services. These data show a shift in CNS practice away from direct patient care and refine our understanding of where CNSs spend their time.

Demographics of the 2016 survey respondents show that 85.1% of respondents were white and 93.5% were women. The majority of the CNSs had a master's degree (61.8%); within that group, however, only 10% also held a doctorate. Interestingly, 67.7% reported being nationally certified—a new finding due to the Consensus Model mandate.

AACN Certification Corporation Analyses

Most of the information collected through the American Association of Nurse Practitioners and National Association of Clinical Nurse Specialists surveys is similar to what the AACN Certification Corporation collects. The AACN Certification Corporation, however, uses survey results to develop test plans and certification examinations, and thus it collects more specific information regarding the importance of each competency to the individual APRN's ability to implement their role.[1,20] The AACN Certification Corporation also collects specific information about the patient care problems nurses most often encounter and the significance of those problems to practice, as well as the skills used and procedures performed by the majority of APRNs in their daily practice. These data inform the profession

and the public on patient care problems within the APRN domain.

In 2016, the AACN Certification Corporation conducted a practice analysis to delineate the current practice of both ACNPs and CNSs. The purpose of a job or practice analysis is to describe the job-related activities of those in the role being examined, and to do so in sufficient detail to provide a basis for developing or revising certification examinations such as the ACNPC-AG and the ACCNS-AG certification examinations.

Methods

In 2016, the AACN Certification Corporation simultaneously convened 2 practice analysis task forces (PATFs)—one of practicing AGACNPs and one of practicing AGCNSs—to develop practice analysis surveys in order to delineate current practices for these roles.[21,22] Subject matter experts on the PATFs provide input on the knowledge, skills and procedures, and competencies that are essential to identifying the responsibilities of the roles being studied. The membership of the PATFs must be diverse enough to represent the role and the job duties performed, and it must represent various levels of clinical experience, educational preparation, practice areas, and clinical settings and facilities. Members must come from all regions of the country. The major responsibilities of the PATFs are listed in Table 2.

The AGACNP PATF created a survey that inventoried 181 patient care problems, 115 skills and procedures, and 116 competencies. These items came from a variety of documents such as previous practice analyses, the outline of the most recent certification examination content, recent articles on the role of the AGACNP, and task force members' experience with the education of AGACNPs and their role. The competencies included in the survey were taken from the core competencies for all nurse practitioners put forth by the National Organization for Nurse Practitioner Faculties,[23] and the 2012 AGACNP competencies published by the American Association of Colleges of Nursing.[24] The PATF used the 2012 competencies because the 2016 AGACNP competencies were not available while the survey was being developed.

To update the AGCNS certification examination, the AGCNS PATF created a comprehensive survey that captured patient problems and practices related to wellness in addition to acute care. To develop the AGCNS survey, the AGCNS PATF used the same processes that the AGACNP PATF used to develop the AGACNP survey (just described). The final

AGCNS inventory consisted of 192 patient care problems, 159 skills and procedures, 79 core competencies (those published by the National CNS Competency Task Force[25]), and 50 competencies specific to adult-gerontology (taken from the 2010 AGCNS competencies published by American Association of Colleges of Nursing[14]).

For both surveys, respondents rated patient care problems, skills and procedures, and competencies on their relevance to/significance in entry-level practice: 0, not applicable; 1, minimally significant; 2, significant; 3, quite significant.[10]

ACNP Survey

Sample. The AACN Certification Corporation emailed invitations to 2886 individuals who had been identified as holding an ACNP-AG or an ACNPC credential. In addition, the AACN Certification Corporation used electronic news blasts, social media, and other means to contact survey participants.

Survey Response Analysis. A team of psychometricians collated the practice analysis survey responses for analysis by the subject matter experts on the PATF. That team collected various data for each item: the number of respondents, mean significance rating, standard error, SD, and percentage of participants who do *not* perform the task. The psychometricians also completed additional subgroup analyses, such as by region, primary position, and type of employer.

To determine whether a patient care problem or skill/procedure should be excluded from the test outline, the PATF applied 2 decision rules to the overall survey: (1) If at least 50% of respondents indicated that a patient care problem, skill/procedure, or competency was included in entry-level practice, the item was included in the final test specifications.[10] (2) If the patient care problem, skill/procedure, or competency was significant to entry-level practice, it was included in the final test specifications. The PATF used a mean significance rating of 1.75 to determine this significance to practice. Before any item was excluded, however, the PATF reviewed each patient care problem, skill/procedure, and competency.

Several subgroup analyses were conducted to determine whether the items selected for inclusion remained significant regardless of the subgroup and thus should be included in the final test plan.[10] Subgroups analyzed included geographic region, community size, facility size, primary position, type of practice (independent or by collaborative agreement), whether respondents served as preceptors to AGACNP students, the number of years of experience in acute care, and the number of years of experience as an AGACNP. A slightly lower mean significance rating of 1.7 was adopted for all subgroup analyses of patient care problems and skills and procedures because of the smaller respondent subgroups (in relation to the larger overall pool). Similar to the overall analysis, the PATF reviewed and evaluated the items to be excluded on the basis of the significance criterion.

CNS Survey

Sample. The AACN Certification Corporation sent surveys to all nurses who held AACN certification as a CNS and to those who identified as a CNS but were certified through other agencies.

Survey Response Analysis. A team of psychometricians collated the practice analysis survey responses for analysis by the subject matter experts on the PATF. For each item, the psychometricians collected the number of respondents, mean significance rating, standard error, SD, and percentage of participants who do *not* perform the task. The team also completed additional subgroup analyses, such as by region, primary position, and type of employer. To determine whether a problem, skill/procedure, or competency should be excluded from the test outline, the PATF applied to the AGCNS survey results the same decision rules applied to the AGACNP survey results (described in preceding section).

On the basis of the subgroup results, the PATF removed items that did not achieve the necessary mean significance (1.75). If an item was borderline, the PATF reviewed it and determined whether it should be included in the test plan. The PATF applied the decision-making rules to assist it in ensuring that the AGCNS certification examination reflects the responsibilities of a CNS on a national level and is representative of a CNS's typical practice.

> To determine whether a patient care problem or skill/procedure should be excluded from the test plan, the PATF applied 2 decision rules.

Development of Certification Examinations

Once the content of the AGACNP and AGCNS examinations were determined, the next step for both PATFs was to determine the number of items allocated to each area of practice. The PATFs used the mean significance ratings, survey results, and current test specifications to guide their final decisions regarding the number of items for each area of practice. The PATFs determined that most items should

Table 3
Comparison of surveys analyzing the practice of ACNPCs and ACNPC-AGs[a]

Component	2006 ACNPC (before Consensus Model)	2011 ACNPC-AG	2016 ACNPC-AG
Response rate, %	21	46	19
Demographics			
Age, mean, y	45	45	41
Sex, % of respondents			
Female	92	86	54
Male	8	14	11
No response	0	0	35
Top respondents by state, %	Illinois, 8 Texas, 8 Maryland, 9	Maryland, 6 Pennsylvania, 8 Ohio, 8	California, 6 Pennsylvania, 9 Texas, 7
Experience as a registered nurse, mean, y	16	19	16
Experience as an advanced practice registered nurse, mean, y	5	9	8
Have prescriptive authority, % of respondents	Not surveyed	92	96
Hospital type, % of respondents			
Community	26	32	25
University/academic	25	37	35
Number of beds, % of respondents	Not surveyed	26 (301-500 beds) 38 (>500 beds)	19 (301-500 beds) 23 (501-800 beds)
Highest degree, % of respondents			
Master's	65	87	72
Post-master's certificate	0	0	12
Doctorate	0	10	15
Test plan allocation			
Clinical judgment/patient care problems, % of respondents	48	73	65
Professional caring and ethical practice, % of respondents	52	26	35
Skills and procedures	65 of 65 surveyed	49 of 114 surveyed	45 of 115 surveyed
Competencies	65 of 65 surveyed	112 of 112 surveyed	116 of 116 surveyed
Cut score[b]	Not available	107 of 150 questions	100 of 150 questions

Abbreviations: ACNPC, adult acute care nurse practitioner; ACNPC-AG, acute care nurse practitioner certified–adult gerontology.
[a] Based on information from Becker et al[4] and the AACN Certification Corporation.[5,7,10]
[b] Passing scores for AACN Certification Corporation examinations are determined by using a systematic procedure known as the modified Angoff method.

require test takers to apply knowledge or analyze clinical data.

Results
ACNP Survey

Sample. The estimated response rate was 19%, although an exact rate could not be calculated because the total number of individuals contacted via social media, the AACN.org website, online links, and by word of mouth could not be determined.[10] Demographically, as of 2016, the average respondent functioning as an AGACNP is a 41-year-old white woman practicing in an urban setting, typically a university medical center with more than 500 beds. The average respondent's highest degree in nursing is a master's degree, although more are obtaining a DNP. The majority of AGACNPs have prescriptive authority and use it under a collaborative agreement, although the number working with full practice authority is beginning to increase.

Survey Responses. When the PATF reviewed each of the items excluded on the basis of the first decision rule (ie, <50% of respondents indicated that the patient care problem, skill/procedure, or competency was included in entry-level practice), they determined that 8 of those skills and procedures were critical to AGACNP practice; therefore, those skills and procedures were retained in the test specifications. Thirty patient care problems fell below the 1.75 threshold for significance specified in the second decision rule. When the PATF reviewed those 30 items, only 1 was found to be critical to practice and was retained in the final specifications. All nurse practitioner competencies were included. The PATF voted unanimously to retain 9 skills/procedures. In the end, 135 of the original patient care problems, 45 skills and procedures, and all 116 competencies remained available for assessment.

Table 3 compares the 2006, 2011, and 2016 survey results. The majority of 2016 survey respondents

(84.6%) held a position as a nurse practitioner, and 72% reported serving as a preceptor for nurse practitioner students. Of the 96.2% of respondents who reported having prescriptive authority, 2.7% reported that they do not use it. Only 10.9% of respondents reported having full practice authority; the other 89.1% continue to work under a collaborative agreement. A total of 63% reported billing under their own nurse practitioner identification number. When responding to the question about the highest degree held in nursing, 72.1% reported holding a master's of science in nursing degree, 12.4% a post-master's certificate, and 12.2% a DNP; only 3% reported holding a PhD. Of the approximately 459 respondents who chose to answer the question, 54.3% identified as female and 11.2% identified as male.

More respondents reported working primarily with geriatric patients, followed by adults. Respondents said that they devote the majority of their time to providing direct patient care, followed by consultation, administration, and teaching. The AGACNP respondents reported primarily practicing in intensive care units: medical (22.6%), surgical (21.2%), heart and vascular (19.9%), medical/surgical (16.7%), or a combined intensive care unit/critical care unit (16.1%); many worked in more than 1 type of intensive care unit. More than half of the respondents (61.3%) practiced in urban settings, 30.1% in suburban settings, and 8.5% in small towns and rural settings. Forty-one percent of respondents worked in university medical centers and 30% worked in community hospitals.

The 10 most commonly encountered patient care problems, as identified by respondents, are listed in Table 4. Respondents also identified the 10 skills and procedures and the 10 competencies they performed most often (Table 4).

CNS Survey

Sample. Twenty-one percent of the CNSs who were contacted responded. Among this 21%, 865 respondents reported working with the adult-gerontology populations.[16] The demographics and survey results reported here are based on those 865 respondents. The average respondent is a 49-year-old white woman who has obtained a master's degree in nursing (Table 5), has more than 20 years of nursing experience—9 of those in the CNS role, and works full-time in a community hospital with more than 500 beds in the Midwest. Ninety-four percent of the approximately 514 respondents identified as female.

In 2011, the average respondent did not hold certification as a CNS but did achieve CCRN certification.

By 2016, the average respondent held one of the available CNS certifications in addition to the CCRN credential. The percentage of CNSs with prescriptive authority was still low (28%) in the 2016 survey, similar to the 29.5% reported in the 2011 survey.

Survey Responses. After all results were reviewed, 123 patient care problems, 56 skills and procedures, and all of the competencies were included in the final test plan.[16] Table 4 provides a list of the 10 most frequently encountered patient care problems, the 10 most frequently performed skills and procedures, and the top 10 competencies performed by both ACNPs and CNSs; these lists are based on the significance ratings reported. These 2 APRN roles have both similarities and clear differences, which are reviewed in the Discussion section.

Table 5 provides a comparison of the 2006, 2011, and 2016 AGCNS survey results. The 2016 survey showed that CNSs hold a variety of titles: 37% identified their primary role as a population-based CNS, whereas 35.6% practiced as unit-based CNSs. Among the respondents, 65% reported serving as a preceptor for CNS students. The majority (70.8%) held a specific APRN license to practice, but 72% reported that they did not have prescriptive authority. Approximately 87.6% of CNSs reported that they did not bill with their own nurse practitioner identification number.

> **The largest percentage of CNSs (59.1%) characterized their practice as being neither part of a collaborative agreement nor independent practice.**

Among CNSs, 28.1% had collaborative agreements and 12.4% reported practicing independently. The largest percentage of CNSs (59.1%) characterized their practice as being neither part of a collaborative agreement nor independent practice. Forty-six percent of responding CNSs were employed in community hospitals, 31% in university/academic hospitals, 4.7% in outpatient clinics, 1% in long-term care facilities, 0.8% in home care, and 0.3% in public health programs.

Development of Certification Examinations

These 2016 survey results are the foundation for the updated entry-level examinations for AGACNPs (ACNPC-AG certification) and CNSs (ACCNS-AG certification), released by the AACN Certification Corporation in January 2018. The final test plans for both of these examinations can be found at www.aacn.org.

Table 4
2016 Practice Analysis Survey: most common patient care problems, most frequently performed[a] skills and procedures, and competencies of AGACNPs and AGCNSs

AGACNP	AGCNS
Top patient care problems	
Hypertension	Diabetes mellitus
Diabetes mellitus	Pain prevention and management
Anticoagulation	Pain
Venous thromboembolism	Hypertension
Acute pulmonary embolism	Hyperglycemia
Hyperglycemia	Advanced care planning
Fluid and electrolyte imbalances	Hypoglycemia
Chronic kidney disease	Electrolyte imbalances
Hypoglycemia	Fluid volume imbalances
Dysrhythmias	Dementia
Top skills and procedures	
Interpret ECG rhythms	Provide nonpharmacological interventions for pain
Prescribe pharmaceutical interventions	Manage patient with dysrhythmias
Interpret 12-lead ECGs	Manage patient with complex pain problems
Provide nonpharmacological interventions for pain	Implement pressure ulcer prevention strategies
Interpret diagnostic imaging (eg, radiography, computed tomography, and magnetic resonance imaging)	Interpret 12-lead ECGs
Interpret hemodynamic values	Manage patient with glycemic abnormalities
Perform cardiopulmonary resuscitation	Direct cardiopulmonary resuscitation
Order nasal/facial CPAP/BiPAP	Apply deescalation techniques (eg, crisis prevention)
Lead cardiopulmonary resuscitation team	Manage patient by using blood and blood products
Manage patient in restraints	Interpret noninvasive hemodynamic values
Top competencies performed	
Prescribes medications while maintaining awareness of and monitoring for adverse drug outcomes and complex medical regimens, especially in high-risk and vulnerable populations	Fosters professional accountability in self or others
Conducts a pharmacological assessment, addressing pharmaco-genetic risks, complex medical regimens, drug reactions, and other adverse events	Practices collegially with medical staff and other members of the health care team so that all providers' unique contributions to health outcomes will be enhanced
Collaborates with intraprofessional and interprofessional team and informal caregivers to achieve optimal patient outcomes during acute, critical, and/or complex chronic illness	Establishes collaborative relationships, within and across departments, that promote patient safety, culturally competent care, and clinical excellence
Creates a climate of patient-centered care to include confidentiality, privacy, comfort, emotional support, and mutual trust and respect	Applies principles of evidence-based practice and quality improvement to all patient care
Works to establish with the patient a relationship characterized by mutual respect, empathy, and collaboration	Facilitates the incorporation of evidence-based practices, products, and technology that are specific to adult/older adult populations into clinical practice and policies
Demonstrates the highest level of accountability for professional practice	Provides consultation to staff nurses, medical staff, and interdisciplinary colleagues
Assesses the patient's and caregiver's educational needs to provide effective, personalized health care	Fosters an interdisciplinary approach to quality improvement, evidence-based practice, research, and translation into practice
Uses best available evidence to continuously improve quality of clinical practice	Mentors health professionals in applying the principles of evidence-based care
Identifies the presence of comorbidities and the potential for rapid physiologic and mental health deterioration or life-threatening instability and the risk for iatrogenesis	Facilitates the provision of clinically competent care by staff/team through education, role modeling, team building, and quality monitoring
Prescribes medication within scope of practice	Promotes a practice climate conducive to providing ethical care

Abbreviations: AGACNP, adult gerontology acute care nurse practitioner; AGCNS, adult gerontology clinical nurse specialist; BiPAP, bilevel positive airway pressure; CPAP, continuous positive airway pressure; ECG, electrocardiogram.
[a] Based on significance ratings from the respondents who perform the skills or procedures.

Table 5
Comparison of surveys analyzing the practice of CCNSs[a]

Component	2006 CCNS (before Consensus Model)	2011 ACCNS-AG	2016 ACCNS-AG
Response rate, %	42 (158/375) for activities of the 8 characteristics of the Synergy Model for Patient Care 62 (of 125 CNSs) for Patient Care Problems survey	27	21
Demographics			
Age, mean, y	45	49	49
Sex, % of respondents			
Female	98	95	94
Male	2	5	6
Top respondents by state, %	California, 12 Texas, Illinois, Minnesota, Missouri, New Jersey, 6	California, 12 Illinois, 9 Ohio, 7	California, 11 Illinois, 6 Virginia, 6
Experience as a registered nurse, mean, y	22	25	24
Experience as an advanced practice registered nurse, mean, y	9	12	9
Have prescriptive authority, % of respondents	Not surveyed	29.5	28
Hospital type, % of respondents			
Community	55	46	46
University/academic	23	28	31
Number of beds, % of respondents	Not surveyed	35 (>500 beds) 29 (301-500 beds)	27 (301-500 beds) 22 (501-800 beds)
Highest degree, % of respondents			
Bachelor's	0	2	0
Master's	74	89	75
Post-master's certificate	0	0	9
Doctorate	7	8	15
Test plan allocation			
Clinical judgment/patient care problem, % of respondents	26	61	65
Professional caring and ethical practice, % of respondents	78	39	35
Skills and procedures	64 of 65 surveyed	29 of 104 surveyed	56 of 104 surveyed
Competencies	65 of 65 surveyed	144 of 144 surveyed	144 of 144 surveyed
Cut score[b]	Not available	93 of 150 questions	95 of 150 questions

Abbreviations: ACCNS-AG, acute/critical care clinical nurse specialist-adult gerontology; CCNS, critical care clinical nurse specialist.
[a] Based on information from Becker et al[4] and the AACN Certification Corporation.[5,6,16]
[b] Passing scores for AACN Certification Corporation examinations are determined by using a systematic procedure known as the modified Angoff method.

Discussion

The 2016 study continued the research on APRN roles in health care and nursing environments after the Consensus Model. Tables 3 and 5 compare the results of practice analysis surveys conducted in the past 14 years. The surveys consistently focused on identifying the practices of each of the 2 designated APRN roles but evolved to include current issues affecting practice.

Acute Care Nurse Practitioner

Although the average AGACNP respondent's highest degree in nursing is a master's degree, more are obtaining a DNP. The increase in 2016 to 15% of respondents reporting a doctorate as their highest degree shows that more nurses are seeking doctorate-level education. The growing number of respondents indicating they hold a post-master's certificate may be due to the Consensus Model recommendation that APRNs align their formal education with the role and the populations for whom they care. More respondents in 2016 reported working mostly with geriatric patients, followed by adults; these populations reflect the aging of the US public.

The AGACNP respondents reported primarily practicing in intensive care units, many in several different types of intensive care units. Most practiced in urban settings (61%), 30% in suburban settings, and less than 10% in small towns and rural settings. Although the largest group of respondents worked in university medical centers (41%), a substantial number worked in community hospitals (30%). Recently published studies of national surveys have described demographic and practice data for ACNPs that are similar to those described here.[8,9]

The 72% of AGACNPs reporting that they served as preceptors for nursing practitioner students confirms their willingness to give back to the profession. Slight movement toward autonomous practice is indicated by the 11% of respondents reporting

having full practice authority while 89% continue to work under a collaborative agreement. That 63% report that they bill under their own nurse practitioner identification number suggests that these respondents have greater evidence of their contributions to patient care and the health care system.

In the past 14 years, the percentage of the test plan allocated to clinical judgment has shifted from 48% (2006), to 73% (2011), and then to 65% (2016). The percentage allocated to professional caring and ethical practice shifted from 52% (2006), to 26% (2011), and then to 35% (2016). The change from 2011 to 2016 could be due to the multifaceted approach necessary when managing acutely and critically ill adult/older adult patients.

A new category, Factors Influencing Health Status, was added to the test plan under Clinical Judgment. This category assesses the competency of addressing health promotion and protection from disease. Four items, making up 3% of the final test plan, address such topics as risk assessment, health promotion, and wellness. The addition of this category recognizes the obligation to include health promotion and wellness activities when caring for acutely and critically ill adult/older adult patients.

As for the 10 most commonly encountered patient care problems (Table 4), it is not surprising that hypertension and diabetes mellitus are in the top 4 on both the AGACNP and AGCNS lists; reports indicate that more than 103 million US adults have hypertension[26] and more than 100 million have diabetes or prediabetes.[27] Venous thromboembolism and acute pulmonary embolus are common complications from surgery and immobility, and they are often managed with anticoagulation—3 more of the top 10 patient care problems for AGACNPs listed in Table 4.

Within the list of the 10 skills and procedures most often performed by AGACNPs (Table 4), 2 skills relate to electrocardiography and rhythm interpretation, 2 others relate to prescribing pharmacologic and nonpharmacologic interventions, yet another is itself a nonpharmacologic intervention, and 2 more are related to cardiopulmonary resuscitation. Considering that approximately 96% of respondents reported having and using prescriptive authority, it is not surprising that prescribing is a top skill.

The 10 competencies AGACNPs report performing most often reflect the knowledge, skills, and abilities required to manage the patient care problems and skills and procedures listed in Table 4. Competencies focused on prescribing, patient-centered care, and collaborative practice top the list and are essential to caring for acutely and critically ill patients.

Clinical Nurse Specialist

Demographics of those functioning in the CNS role have changed little over time. Certification status, however, has shifted. Although the average respondent in 2011 had CCRN certification, by 2016 the average respondent had one of the available CNS certifications too. The percentage of CNSs with prescriptive authority remains low, and the top patient care problems and skills and procedures identified via the surveys support the low absolute need for prescriptive authority.

Most CNS respondents did not bill using their nurse practitioner identification number. Those functioning as a population unit–based CNS may have only a small or no role in direct care that requires billing. Instead, the CNS impacts patient care by improving outcomes through incorporating evidence-based practice into care delivered directly by registered nurses and providers. Areas of employment that may signify expansion of the CNS role with a wellness focus include outpatient clinics (4.7%), long-term care (1%), home care (0.8%), and public health (0.3%).

With the implementation of DNP programs, the highest degree earned has shifted. The highest degree achieved remains a master's degree in nursing (74.7%), followed by a DNP (10.1%), indicating that CNSs have embraced this degree.

From 2006 to 2016, test plan allocation shifted—significantly so in clinical judgment and patient care problems (from 26% to 65%). Professional caring and ethical practice correspondingly decreased from 78% to 35%. This shift occurred after the Consensus Model had been implemented, which further standardized the level at which a CNS entered practice and validated the CNS as an APRN role.[1]

The APRN Consensus Model defines the role of the CNS to include care of patients along the health care continuum, from wellness through acute care.

> When comparing the 10 patient care problems encountered most often by ACNPs and CNSs, 5 are found on both lists.

> Educators, researchers, legislators, regulators, students and practicing APRNs and their colleagues should use the practice analysis results presented here to inform their work.

Therefore, the 2016 survey included specific questions to query the CNS community about problems and procedures related to wellness. Based on the results of that survey, a new category was added to the examination: Factors Influencing Health Status. This category includes an additional 13 problems and competencies related to topics such as advanced care planning, immunizations, nutrition and weight management, and secondary prevention. This continues to shift the examination away from the critical care focus of the 2006 test to one that reflects the current wellness through acute care competencies.

Regardless of setting, CNSs influence 3 spheres: patient, nurse, and system.[28] The survey continues to reinforce the top problems, skills and procedures, and competencies as involving all 3 of these spheres. A CNS within any of these spheres can approach the identified top problems (eg, diabetes mellitus) and skills and procedures (eg, pain management). A CNS can treat the patient individually, provide expert consultation and education to registered nurses caring for patients, or develop programs to improve outcomes.

Comparison of the 2 APRN Roles

When comparing the 10 patient care problems most often encountered by ACNPs and by CNSs, 5 of the 10 are found on both lists. Interestingly, pain, pain prevention and management, and dementia are found on the CNS list but not the ACNP list. This may be because these patient problems are more sensitive to nursing interventions and because their symptoms require more time to reduce.

Similarly, 5 of the top 10 skills and procedures are performed by both ACNPs and CNSs. The differences between the 2 lists align with the focus of their practices. Skills such as prescribing pharmaceutical interventions and interpreting diagnostic images are performed more by ACNPs as they diagnose and develop a management plan. Skills such as implementing pressure ulcer prevention strategies and managing patients with glycemic abnormalities are strategies that often require a CNS to consult with staff in order to ensure positive outcomes for patients.

Interestingly, the competencies rated as often performed by these 2 APRN groups seem to align with the focus of each role. AGACNPs prescribe, collaborate, and provide patient-centered care, whereas AGCNSs continuously collaborate with others while implementing evidence-based practice, and they educate and mentor nurses and other health care clinicians.

Limitations

Each of the 3 practice analysis studies conducted by the AACN Certification Corporation for both the ACNP and the CNS roles has limited generalizability to all of APRN practice. The limited number of ACNP and CNS respondents to the 2006 practice analysis led to results that reflected only the subset of certified ACNPs and CNSs who completed the survey.[4,5] For the 2011[6,7] and 2016[10,16] practice analysis survey results, the convenience sample and the respondents' voluntary participation may have introduced selection bias, which is typical of practice analysis studies conducted for professional credentialing examinations.

Conclusions

APRN practice is dynamic and evolving, and implementation of the Consensus Model for APRN Regulation has not changed that. Professional organizations use practice analysis studies to ensure that certification examinations, based on survey results, assess relevant and current knowledge needed for safe practice as an entry-level APRN. Educators, researchers, legislators, regulators, students, and practicing APRNs and their colleagues should use the practice analysis results presented here to inform their work with regard to the scope and components of the AGACNP and AGCNS roles.

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