

FUTURE OF THE RESEARCH-FOCUSED DOCTORAL PROGRAM IN NURSING: PATHWAYS TO EXCELLENCE

I. PREAMBLE/INTRODUCTION

The Doctor of Philosophy (PhD)¹ represents the highest level of formal education for a career in research and the scholarship of discovery. It prepares scholars for the expression and communication of the knowledge base in the profession. The PhD graduate develops the science, stewards the profession, educates the next generation of the profession, defines its uniqueness, and maintains its professional integrity. In the academic setting, the PhD is the highest academic degree and is required for success as a scientist in the multiple disciplines represented within educational institutions. In the scientific arena within and beyond the Academy, the PhD is the beginning preparation for the development of independence in scientific pursuit. Post-doctoral study is recommended for depth in a field. Attainment of the PhD requires a strong scientific emphasis within the discipline; an understanding of the science of related disciplines, translation science and dissemination of innovations; and interprofessional collaboration. For the profession to achieve this vision and maximum impact on the healthcare system, PhD nurse scientists should reflect society at large.

Several factors influenced the development of this report. First is the necessity to advance nursing science amongst the burgeoning knowledge of basic and applied sciences in healthcare. The growth in knowledge, emergence of new and reemerging infectious diseases, growth of racial and ethnic populations, demands of chronic illness care, changes in healthcare delivery, and increasing globalization require scientific foundations to ensure effectiveness and efficiency as well as methods of translation to practice. Second is the communication and bio-health informatics revolution, which mandates the incorporation of this knowledge and skill in developing nursing science and the education of future nurse researchers. Third is the overwhelming call to team science and interdisciplinary research to provide the scientific knowledge to address the complex healthcare issues of today and tomorrow, and thus the necessity to incorporate these concepts into PhD education.

Despite the critical need for nurse scientists and the increase in PhD nursing programs over the past decade, the number of PhD-prepared nurse scientists has not increased proportionally to societal demand or to the increase in PhD programs. Thus, expectations and recommendations are set forth in this report to better meet the growing demand for nurse scientists who can develop the science, steward the profession, and educate the next generation of nurse researchers. Developing nurse scientists who can function on research teams that span traditional and professional boundaries will require: 1) changes in curriculum and 2) faculty mentors who are funded and working in interprofessional teams. These will include an increased emphasis in learning the science of multiple professions or disciplines.

¹ Research-focused doctoral programs in nursing include doctor of philosophy (PhD), and doctor of nursing science (DNS and DNSc) degree programs. A majority of the research-focused programs in nursing do award the PhD degree. For the purposes of this document the PhD degree will be used to refer to all research-focused programs.

These standards and recommendations focus on 1) increasing the pipeline of nurses entering PhD programs by promoting entry into PhD studies earlier in nurses' education and careers; 2) increasing the rigor and mentoring of PhD students and PhD graduates; and 3) providing environments for PhD graduates that foster and promote development of nurse scientists.

It is with these considerations that AACN's Task Force on the Future of Research-Focused Doctoral Education in Nursing has prepared this position paper on the preferred future of PhD education in nursing.

II. TASK FORCE CHARGE AND PROCESSES

AACN Board Charge to the Research-Focused Task Force

This task force is charged with developing a vision of the preferred future for the research-focused doctoral degree program and graduates. The task force is to consider the variety of factors affecting nursing education, nursing research, and academic careers as research scientists. These include:

- the historical trend in nursing to enter doctoral education late in one's career;
- the ongoing belief of some members of the discipline that achieving competence in practice is an essential prerequisite to furthering one's education;
- the establishment of programs to more rapidly transition students from the baccalaureate or master's entry level professional nursing degree or other relevant degrees to research-focused doctoral programs in nursing;
- the increased opportunities translational science creates for researchers who study phenomena relevant to nursing with capability (knowledge and skills) to engage in interprofessional and translational research;
- the complex responsibilities and expectations assumed by faculty with research-focused doctoral degrees to develop careers as scientists with funded research programs;
- the curricular innovation needed to better prepare the graduate of a research-focused program for faculty and scientist roles;
- the evolving relationship between the research-focused doctorate and the practice-focused doctorate; and
- essential characteristics of the faculty, students, and resources.

Task Force Processes to Meet Charge

To gain a broad perspective of research-focused education, trends, and national recommendations, the Task Force conducted a review of the literature and other key resources. This review included such resources as Walker et al.'s (2008) *The Formation of Scholars: Rethinking Doctoral Education for 21st Century*; the National Research Council of the National Academies reports, *Advancing the Nation's Health Needs* (2005) and *Assessing Research-Doctoral Programs: A Methodology Study* (2003); the Academic Analytics, LLC (2008) report, *Faculty Scholarly Productive Index*; US News & World Report *Criteria for America's Best*

Graduate Schools; and The Ohio State University’s self-review of doctoral programs (Glenn, 2008). A review of other health professions’ literature, including medicine, pharmacy, and dentistry, was undertaken. A comprehensive list is included in the bibliography section of this document. In addition, to determine current practices, curricula from diverse nursing PhD programs were reviewed and compared.

Input was sought from stakeholders and diverse audiences. From February to April 2009, the Task Force held open forums at each of the four regional research nursing society meetings. Questions posed to forum participants included:

- Characteristics/competencies expected of PhD graduates
- Critical elements needed to sustain a PhD program
- Clinical content or experiences needed in a BSN-to-PhD program
- Strategies for attracting younger students into a PhD program

Feedback from each of these forums was reviewed and discussed in depth and informed the deliberations and recommendations of the Task Force. Forums also were held at the 2009 and 2010 AACN Doctoral Conferences and at the AACN Semiannual and Annual Meetings in Spring and Fall 2009.

II. OUTCOMES AND CURRICULAR ELEMENTS OF THE RESEARCH-FOCUSED DOCTORAL PROGRAM IN NURSING

The PhD requires both mastering and extending the knowledge of the discipline through research. PhD programs in nursing prepare graduates to master the breadth of the discipline, as well as the depth of a particular area of related science. These programs provide an understanding of the environment within which nurses practice and prepare graduates to further the scholarship of the discipline. The core of the PhD program is an understanding of nursing and the development of competencies to expand science that supports the discipline and practice of nursing. A hallmark of doctoral education is a highly individualized program of study that develops expertise in the core knowledge and methods of the discipline and depth in a selected area of research. In addition, programs should prepare graduates with skills in teaching, leadership, mentorship, and interprofessional communication. Expected outcomes and core curricular elements of PhD programs in nursing are delineated in Table 1. PhD programs are expected to have the environment, faculty, resources, and infrastructure to support the successful processes for educating the PhD student in all of the core outcomes with an emphasis on one or more areas of science.

Table 1. Expected Outcomes and Curricular Elements of PhD Programs in Nursing

Role	Expected Outcomes	Core Curricular Elements
Develop the Science	<ul style="list-style-type: none"> • Master in-depth knowledge in a substantive area • Appreciate the history and philosophy of science • Understand the evolving nature of the 	<ul style="list-style-type: none"> • Sufficient formal and informal learning experiences to build scientific depth in an identified area of study

	<p>nursing discipline</p> <ul style="list-style-type: none"> • Critique and integrate different science perspectives in the conduct of research • Generate new ideas based on a critical evaluation of existing knowledge • Conduct original research • Utilize professional and research ethics and judgment in the conduct of research • Assume leadership in the conduct of culturally competent scholarship to improve nursing practice • Communicate research findings to lay and professional audiences and identify implications for policy, nursing practice, and the profession 	<ul style="list-style-type: none"> • History and philosophies of science • Scientific methods, including team science • Advanced research design and statistical methods • Research ethics • Data, information and knowledge management, processing and analysis • Ways of knowing and habits of the mind • Concepts and components of scholarship • Mentored research experiences, including interprofessional mentors • Preparation of research grants and manuscripts for publication • Structured/guided clinical or practice experiences as needed to inform one's area of science and its application
<p>Steward the Discipline</p>	<ul style="list-style-type: none"> • Integrate the components of scholarship: research, teaching, mentoring, and service to the profession • Communicate scholarship including peer-refereed publications and presentations for professional interprofessional audiences • Understand the evolving roles and responsibilities of a nurse scholar • Lead in advancing the profession 	<ul style="list-style-type: none"> • Theoretical/scientific underpinnings of nursing and other disciplines • Practice knowledge that informs nursing science and its application • Culture of nursing and environments in which it is practiced • Strategies to influence health policy • Professional values • Scholarly writing • Leadership related to health policy and professional issues
<p>Educate the</p>	<ul style="list-style-type: none"> • Conduct team science and participate and 	<ul style="list-style-type: none"> • Intra- and inter-professional

Next Generation	lead interprofessional research teams <ul style="list-style-type: none"> • Provide professional and research mentorship to others • Contribute to a global community of scholars 	communication skills <ul style="list-style-type: none"> • Leadership in intra-and interprofessional research teams • Mentoring • Leadership in culturally competent science
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IV. ESSENTIAL COMPONENTS OF RESEARCH-FOCUSED DOCTORAL PROGRAMS IN NURSING

A strong curriculum is an essential component of research-focused doctoral education in nursing; however, it is not sufficient for ensuring that graduates achieve the desired outcomes. Research-focused doctoral programs must include a minimum set of additional essential elements: qualified faculty and students; infrastructure and resources to support the program; and a comprehensive evaluation program to assure attainment of goals and continuous improvement. These essential elements should be in place by the time a program admits its first students and must be maintained thereafter in order to ensure its sustainability.

A sufficient cadre of experienced and well qualified *faculty* who are being mentored and supported in their scholarship is essential to the success of a research intensive doctoral program. Faculty members must represent a diversity of backgrounds and intellectual perspectives. Further, they must be seasoned researchers with productive programs of independent research who are strong mentors and role models for scholarship in an interprofessional environment, and they must help to create an environment that socializes students as research scholars. There must be sufficient numbers of such faculty members to assure (1) that each student is provided with opportunities to generate new knowledge and its application and dissemination; (2) depth of coverage for the major curricular components; (3) a core of mentors in one or more areas of research emphasis; and (4) a scholarly learning community.

A sufficient pool of applicants for the program must be available so that selected *students* are highly qualified, diverse, committed and motivated to develop a research career, with goals that are congruent with those of the faculty, school, and institution. The research interests of individual students should coincide with the research programs in which one or more faculty are engaged, in order to ensure adequate mentorship and dissertation guidance. Throughout the program there should be a sufficiently large cohort of students to create a scholarly learning community. As part of their scholarly work, the students must commit a significant proportion of their time to the program and demonstrate a pattern of productive scholarship by assisting or taking the lead in the preparation of competitive grants for external funding and peer-reviewed papers and presentations.

Resources essential to a successful research-intensive doctorate include a parent institution and school with support structures that provide for the financial and academic needs of the students and faculty. Such structures include training and research grants and other sources of external funding; research administration expertise to handle regulatory and funder compliance, peer review and IRB review management, budget assistance and compliance oversight, grants submission, and technical support for these activities; school or institutional support for research design, data management, and analysis; institutional support for library facilities including knowledge databases, information technology, and state-of-the-art communication resources; and adequate classroom, seminar, and laboratory space and facilities. The program should be an integral component of a university in which the core mission includes research and in which the environment actively fosters interprofessional scholarship and collaboration.

Finally, a comprehensive, systematic, and ongoing **evaluation** plan is an essential element of success and must be a component of the research-intensive doctoral program from its inception. The evaluation plan must be designed to assess the extent to which its graduates attain the desired outcomes of the program and to measure whether its processes and outcomes meet the standards of the parent institution as well as national benchmarks for research-intensive doctorates in nursing. The evaluation plan should solicit input from and provide ongoing feedback to a variety of sources, including its students, graduates, faculty, administration, and professional or other relevant external constituencies. The extent to which the program is adequately supported as well as the extent to which the program uses resources efficiently and effectively must be assessed on an ongoing, regular basis.

The essential elements described above are considered important criteria upon which to base institutional decisions regarding the implementation of a research-focused doctoral program, as well as to guide periodic reviews of program quality and sustainability. Table 2 includes a detailed summary of these four essential elements: well-prepared faculty and administration, well-qualified students, appropriate resources and infrastructure, and a comprehensive evaluation plan. It also includes examples of how these elements are reflected in strong programs.

Table 2. Essential Elements for Research-Focused Doctoral Programs in Nursing

Topic	Essential Element	Examples
FACULTY AND ACADEMIC LEADERSHIP: Faculty as a whole	I. A sufficiently large cadre of faculty to create an intellectual community and provide sufficient guidance and oversight/advising for students in one or more substantive areas of emphasis.	<ul style="list-style-type: none"> • Faculty research teams sharing a specific program of research. • Several faculty members with programs of research in each of the emphasis areas/substantive foci identified as being available within the program. • Networks of faculty within

	<p>II. Represent and value a diversity of backgrounds and intellectual perspectives.</p> <p>III. Meet the requirements of the parent institution for graduate research and doctoral education.</p> <p>IV. Create an environment in which mentoring, socialization of students as research scholars, and the existence of an intellectual community of scholars is evident. In addition, create an environment in which processes and opportunities are provided to students to generate new knowledge and application from the faculty's or student's research.</p> <p>V. Director of doctoral program with excellent academic credentials, leadership skills, scholarly</p>	<p>and outside the School and parent institution that could provide appropriate co-mentorship.</p> <ul style="list-style-type: none"> • Faculty includes individuals from a variety of racial and ethnic backgrounds. • Faculty reflects diversity. • Faculty includes nurses with doctoral preparation in a variety of disciplines other than nursing and non-nurses with preparation in other disciplines. • Faculty members from other departments have joint appointments and contribute to the PhD program in nursing. <ul style="list-style-type: none"> • Hold earned research doctorates. • Evidence of national/international reputation. • Tenured professors and/or senior faculty ranks. <ul style="list-style-type: none"> • Meet regularly with students • Students actively participate in scholarly activities within the academy and network with faculty and each other and with scholars in other departments and disciplines. • Regular journal clubs and scholarly seminars are convened. <ul style="list-style-type: none"> • Director is provided with a minimum of 20% effort to administer the program.
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	<p>productivity with evidence of an extramurally funded research program, and designated time to conduct administrative requirements of the program.</p>	
<p>FACULTY AND ACADEMIC LEADERSHIP:</p> <p>Individual Faculty Members</p>	<p>I. Maintain productive programs of research that:</p> <p>A. Are developed over time and build upon previous work;</p> <p>B. Are at the cutting edge of the field of inquiry;</p> <p>C. Are congruent with research priorities within nursing and its constituent communities;</p> <p>D. Include a substantial proportion of extramural funding;</p> <p>E. Attract and engage students.</p> <p>II. Make scholarly contributions to the discipline, as indicated by:</p> <p>A. Extramural grant awards in support of research or scholarship;</p> <p>B. Peer-reviewed publications of research, theory, or philosophical essays;</p> <p>C. Presentations of research, theory or philosophical essays;</p> <p>D. Scientific review activities such as with NIH study sections and other grant application review groups;</p> <p>E. Editorial review activities;</p> <p>F. State, regional, national, or international recognition as a scholar in an identified area; and</p> <p>G. Evidence of influence on public and health policy throughout the field.</p> <p>III. Collaborate effectively on interprofessional research teams.</p>	<ul style="list-style-type: none"> • Have strong records of external, peer-reviewed research funding and peer reviewed publications. • Have strong records of external research funding and peer-reviewed publications. • Have collaborators in other disciplines, schools, and departments and international collaborators. • Participate and/or lead

	<p>IV. Identify, generate, and utilize resources within the university and broader community to support program goals.</p> <p>V. Teach, advise, and mentor effectively and creatively, with a strong commitment to excellence.</p>	<p>interprofessional collaborations</p> <ul style="list-style-type: none"> • Participate in continuing education and courses offered outside the School. • Participate in and support inter-disciplinary/inter-departmental planning activities and programs. <ul style="list-style-type: none"> • Each faculty member should serve as the major adviser/chair for a limited number of students (e.g., 3-5 students). • Meet regularly with advisees and provide thoughtful critique regarding student products. • Support students to prepare publications and grants and assist them in their preparation. • Support students to attend and participate in regional and national scholarly events. • Provide opportunities for students to collaborate with faculty on research projects, publications and presentations.
<p>STUDENTS: Upon Admission</p>	<p>I. Students are selected from a pool of highly qualified and motivated applicants who represent diverse populations.</p> <p>II. Students demonstrate commitment to a research career.</p> <p>III. Students' research goals and objectives are congruent with the</p>	<ul style="list-style-type: none"> • Evidence of past performance indicates that students can succeed in a rigorous program of study (e.g., grades, GRE scores, past publications). • Student's goals reflect strong and sustained interest in research and scholarship. • Student's research interests are congruent with the

	<p>goals and major foci of the doctoral program, faculty research expertise, and program resources.</p>	<p>expertise of the program faculty supplemented by the interprofessional resources of the university.</p>
<p>STUDENTS: During the Program</p>	<p>I. Students seek financial support through competitive intramural and extramural academic and research awards.</p> <p>II. Students commit a significant portion of their time to the program.</p> <p>III. Students complete the program in a timely fashion.</p> <p>IV. Students demonstrate a pattern of productive scholarship and collaboration with researchers in nursing and other disciplines in scientific endeavors to include peer-reviewed publications and presentation of scholarly work.</p> <p>V. Student dissertations are guided by a faculty mentor or team of mentors with expertise in the field.</p> <p>VI. There is a sufficiently large cohort of students to create a critical mass and scholarly learning community.</p>	<p>• By the end of their first year, student will submit a grant proposal (e.g., NRSA or equivalent) for extramural funding.</p> <p>• Student works as a research assistant for a funded project.</p> <p>• Generally doctoral study is full-time. If the student is part-time, there is evidence that he/she is participating in scholarly activities beyond attending class (i.e., becoming socialized into a scholarly role).</p> <p>• Student progress is monitored regularly and is consistent with university standards for time to graduation.</p> <p>• Students submit manuscripts for publication and abstracts for presentation at regional/national meetings.</p> <p>• Students maintain a portfolio and/or resume of scholarly work.</p> <p>• A team of mentors with relevant expertise is established if the student's work is outside the expertise of a nursing faculty member.</p> <p>• At least 3-5 students are admitted yearly.</p>

<p>RESOURCES AND INFRASTRUCTURE</p>	<p>I. Sufficient human, financial, and institutional resources are available to accomplish the goals of the unit for doctoral education and faculty research.</p> <p>A. The parent institution exhibits the following characteristics:</p> <ol style="list-style-type: none"> 1) Research is an explicit component of the mission of the parent institution; 2) An office of research administration; 3) A record of peer reviewed external funding; 4) Post-doctoral programs; 5) Internal research funds; and 6) Mechanisms that value, support, and reward faculty and student scholarship and role preparation (e.g., support for presentations at scholarly meetings). 7) A university environment that fosters interprofessional research and collaboration. <p>B. The school/college offering the nursing doctoral program exhibits the following characteristics:</p> <ol style="list-style-type: none"> 1) Faculty who have active programs of research as well as other faculty experts to provide substantive expertise and mentor students in other role preparations. 2) Infrastructure that supports high quality faculty and student research; <ol style="list-style-type: none"> (a) Peer review of proposals and manuscripts in their development phases; (b) Research design expertise; (c) Data, information and knowledge management, 	<ul style="list-style-type: none"> • University and school mission statement explicitly mentions research as one component. • Internal funds are available for competitive pilot projects or for travel to meetings for scholarly presentations. • The university and/or school have funded post-doctoral trainees. • There is an active research office in the school and/or university that provides resources and support (e.g., pilot study funds, statistical consultation, assistance with budget preparation and submission). <ul style="list-style-type: none"> • Free access to online and print journals, books, literature, and search support. • Designated study/office/meeting space for doctoral students.
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	<p>processing, and analysis support;</p> <p>(d) Communication and information technologies (hardware, software and technology support expertise); and</p> <p>(e) Expertise in grant proposal development and management, including ethical and human subjects training and support.</p> <p>3) Space and equipment sufficient for:</p> <p>(a) Faculty research needs (e.g., laboratories, interview rooms, supplies);</p> <p>(b) Doctoral student study, meeting and socializing; and</p> <p>(c) Seminars and small group work.</p> <p>C. Mechanisms for financial support for doctoral students, ideally to encourage and allow full-time study.</p> <p>II. State-of-the-art technical and support services are available and accessible to faculty, students, and staff for state of the science information acquisition, communication, and management.</p> <p>III. Library and data and knowledge-base resources are sufficient to support the</p>	<ul style="list-style-type: none"> • Scholarships are available for doctoral students for tuition and/or stipends. • PhD program has access to funded training grants that support doctoral students. • Allowable percentage of federal nurse traineeship funds is available to students in research-focused doctoral program.
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	scholarly endeavors of faculty and students.	
EVALUATION	<p>I. A comprehensive evaluation plan, supported by sufficient resources, is in place, and has the following characteristics:</p> <p>A. Is systematic, ongoing, comprehensive, and focuses on the university's and program's specific mission and goals;</p> <p>B. Assesses the extent to which graduates attain the desired outcomes of the program;</p> <p>C. Includes comprehensive process and outcome data to allow assessment of the degree to which the program demonstrates indicators of quality and to determine patterns, trends, and future directions;</p> <p>D. Engages students and graduates in the evaluation process as part of their learning experience;</p> <p>E. Includes data from a variety of internal and external constituencies.</p> <p>F. Compares program processes and outcomes to the standards of the parent graduate school/university and benchmark research-focused doctoral programs in nursing.</p> <p>G. Provides ongoing feedback to program faculty, administrators, and external constituents to promote program improvement.</p> <p>II. The evaluation plan provides comprehensive data to determine patterns and trends and recommend future directions at regular intervals.</p> <p>III. Assesses whether the program is</p>	<ul style="list-style-type: none"> • Specific budget is allocated to ongoing evaluation of doctoral program, faculty, and student outcomes. • An annual survey of graduates is conducted to assess their current status and productivity. • Graduates are surveyed immediately prior to graduation and then at least at 1, 3, 5, and 10 years after graduation (the 3-year point allows assessment of post-doctoral fellowship and related accomplishments). • Student feedback is solicited regarding specific courses, mentoring, and general academic milieu. • There are regular, systematic external evaluations of the program (e.g., every 5 years). • Faculty members receive annual evaluations and feedback. • Evaluation data are provided to appropriate audiences and there is demonstrated evidence that the data are used to promote ongoing program improvement. • Program is fiscally sound.

	supported with adequate human, financial, and institutional resources.	
	IV. Assesses whether the program uses resources efficiently and effectively.	

V. GOALS AND CHARACTERISTICS OF POST-DOCTORAL PROGRAMS.

Goals of post-doctoral programs are to provide a bridge for new scientists to become independent, productive researchers who will generate and communicate knowledge fundamental to the discipline and clinical practice and to engage individuals in developing a program of research. New scientists embarking on post-doctoral study are expected to develop more depth in an area of science and enhance their expertise and skills for communicating within the scientific community and for securing funding for future research.

Expected outcomes from post-doctoral study include:

- Data-based publications accepted in peer reviewed journals;
- Competitive proposals submitted for major external funding;
- Contributions that provide additional depth in an area of nursing science; and
- Beginning development of national collaborative networks in a specific area of research interest.

Program Characteristics

- Embedded in a school with a research-intensive environment with a cadre of senior-funded investigators and an appropriate research infrastructure.
- Focus on outcomes reflecting productive research programs (e.g., publications, abstracts, proposals).
- Careful and frequent monitoring and tracking of fellows.
- Strong match between post-doctoral fellow, support, and faculty scientist.
- Infrastructure to support interprofessional collaborations and opportunities (e.g., seminar series, internet-based campus resource to identify researchers across disciplines).
- Mentored program with good matches between student and mentor (funded scientist).
- Environment that is mutually beneficial to the mentor and student.

Faculty Characteristics

- Senior researchers with funded grants.
- Experienced mentors for doctoral students and junior faculty.
- Scholarly role models and teachers.
- Strong interprofessional collaborative relationships.

Student Characteristics

- Committed to a program of research and to a career as a nurse scientist.
- Strong commitment to research scholarship.
- Intellectual talents consistent with the demands of developing an independent research program.
- Skills and knowledge appropriate to develop new research ideas and secure funding (e.g., communication, knowledge of methodology, and analyses).
- Interpersonal skills consistent with being able to develop an interprofessional research team.
- Ethical conduct of research.

VI. INCREASING THE NUMBER AND DIVERSITY OF RESEARCH-FOCUSED DOCTORAL STUDENTS AND FACULTY

There is an urgent need in the discipline to increase the numbers and diversity of graduates prepared with PhD degrees to become nurse researchers and faculty members in academe. If history provides a lesson, this need may unfortunately lead to PhD programs being developed or continued that do not have sufficient resources. A number of characteristics of students, faculty members, and doctoral programs can be identified as those that are required to facilitate the successful progression of students through the PhD program to graduation and the development of successful research careers. Barriers also exist that may serve as impediments to successful completion for even the most motivated and gifted students. Programs must be assessed to determine whether facilitators are in place to ensure that students in the doctoral program will be successful in achieving a role as an independent scientist and whether barriers exist that will hinder appropriate preparation of graduates for a career in academe. Examples of these barriers and facilitators are summarized in Appendix A.

The following recommendations are set forth to maximize facilitators to PhD education by individual university programs:

1. Recruit students that recognize that the PhD is a research degree and those pursuing PhD education are the next generation of nurse scientists to advance the knowledge of nursing practice and healthcare.
2. Develop consortia and partnerships among PhD programs to maximize faculty and program expertise (e.g., the Council on Intercollegiate Collaboration).
3. Increase federal support and university fellowships for students to pursue full-time PhD study.
4. Articulate examples of programs of research for PhD graduates employed in a variety of academic, public policy, practice, federal agency, and private foundation settings.
5. Counsel students regarding possible career paths for emerging scientists.
6. Encourage joint academic appointments for PhD graduates employed in other settings.
7. Facilitate entry into a PhD program early in one's career

Increasing the Racial and Ethnic Diversity of Students and Faculty in Research-Focused Doctoral Programs

The Task Force supports the overlying principles identified by the Sullivan Commission to Transform the Health Professions as essential to increasing diversity in nurse researchers:

- To increase diversity in the health professions and among nurse researchers, the culture of the health professions must change.
- New and non-traditional paths to becoming a nurse researcher should be explored.
- Commitments to increasing diversity must be at high levels within the profession, within universities, and within schools of nursing.

The Task Force also supports the recommendations advanced in the Institute of Medicine (2004) report *In the Nation's Compelling Interest Ensuring Diversity in the Health-Care Workforce* and by AACN's Cultural Competency Advisory Group (2009) in the document *Establishing a Culturally Competent Master's and Doctorally Prepared Nursing Workforce*. The Task Force supports the notion that a culturally diverse faculty and student body will both attract and strengthen efforts in achieving cultural competence for all nurse scholars.

The following recommendations, based on the principles and recommendations delineated in these reports, are set forth to increase the numbers and diversity of individuals seeking a career as a nurse researcher:

1. Evaluate regularly the admission, progression, and graduation data for diverse students.
2. Make program adjustments based on predictors of success.
3. Partner with minority organizations to glean timely and workable strategies to attract and support PhD students.
4. Identify promising diverse racial/ethnic scholars early in their career and provide programmatic support and resources for advanced research education and career development.
5. Create partnerships with minority scientists in collaboratives and foster interprofessional science to provide additional mentors and support for students to combat the isolation experienced by many minority PhD students.
6. Increase the recognition of the importance of health disparities research.

VII. EDUCATIONAL PATHWAYS TO THE RESEARCH-FOCUSED DOCTORATE IN NURSING

Nursing science and nursing education are in transition. As the Doctor of Nursing Practice (DNP) degree becomes the standard for specialized advanced clinical roles, the unique and important roles filled by those prepared with the PhD in Nursing need to be reaffirmed. PhD graduates will continue to be the scholars and investigators who advance the knowledge base for clinical nursing practice as well as for other relevant areas such as health policy and informatics. PhD graduates will be expected to provide leadership in advancing academic nursing and the profession overall. They should be prepared to serve as role models, mentors and teachers, although the focus and setting of their work may vary.

All nurses who enter a PhD program in nursing should have completed an education program that included at a minimum the outcome competencies delineated in *The Essentials of Baccalaureate Education for Professional Nursing Practice* (2008).

PhD programs in nursing may prepare graduates through a variety of education pathways. Nurses may enter the PhD program after completing a baccalaureate in nursing, a master's in nursing, or a doctor of nursing practice degree. Some PhD programs admit nurses with graduate degrees in other disciplines; in addition, other programs admit individuals with no nursing background or degrees. Varied pathways provide flexibility and support graduates in achieving diverse career goals. Institutions should be clear about the education pathways offered and should assist individuals in determining pathways that best fit with educational background and career goals. Prospective students also should be proactive and seek guidance regarding career goals and selection of appropriate educational pathways.

All research-focused doctoral programs should prepare graduates with the expected core outcomes delineated in Section II. To achieve these core outcomes the curriculum should include at a minimum the core curricular elements also delineated in Section II. Programs that prepare graduates for clinical or translational research should include a substantive focus in a specific area of clinical nursing. Other programs or tracks may prepare graduates for research in a non-clinical area relevant to nursing, such as health policy or informatics — and these programs should include significant content related to the area of focus. Other programs are multiprofessional in nature and may offer a minor in a related area in addition to the nursing major. The most commonly identified education pathways for the research-focused doctorate in nursing, the recommended requirements for each pathway, and the career goals best suited to that pathway are summarized below. It is anticipated that additional pathways exist or will emerge. However, these new pathways, like those delineated below, should include the elements described in Section II. In addition, as pathways emerge there should be clear recommendations related to the career goals best suited to these new pathways.

Pathways to the PhD in Nursing

Pathway 1:

BSN → MSN → PhD

The student, with a BSN, earns an MSN with a direct care focus (CNL) or with a non-direct care focus (e.g., management, informatics). The master's degree program includes didactic and clinical or practicum experience appropriate for role preparation. Transition from the master's into the PhD programs could be seamless or with intervening experiences. In the PhD program, for those students focusing on clinical research problems or depending upon one's career goals, the student may elect to obtain additional advanced clinical knowledge through coursework or a practica.

Pathway 2:

BSN → PhD

The BSN student would transition immediately into the PhD program or could enter after a period of practice/experience but without an advanced nursing degree. Depending on one's

career goals and research focus, practice-focused education experience may be needed as a part of formal PhD study. Possible models include:

- student participates in an accredited residency;
- student participates in a faculty-guided clinical practicum;
- student participates in relevant practice experiences;
- student engages in courses with advanced nursing clinical content.

Pathway 3:

BSN → DNP/PhD

The student, with either a BSN or an advanced-generalist MSN, enters the combined DNP/PhD program. The student is awarded two degrees. Completion of this dual-degree, integrated program is estimated to require approximately 6 years full-time study. The student needs didactic and practice experiences in an advanced area of practice sufficient to prepare her/him for certification in the practice area. Student will complete a DNP capstone project and a separate, distinct PhD dissertation.

It is recognized that there will be an overlap in selected curricular areas and coursework. Efforts should be made to streamline the process for student's completion of both DNP and PhD degrees whether this is in an integrated DNP/PhD program or in a sequential DNP to PhD program, as shown in pathway 4.

Pathway 4:

BSN → DNP → PhD

The student, with a BSN degree, would obtain a DNP degree that would include all didactic and clinical experiences to prepare her/him for certification in an area of advanced nursing practice. The DNP graduate would then transition directly or after some elapsed period of time into a PhD program.

It is recognized that there will be an overlap in selected curricular areas and coursework. Efforts should be made to streamline the process for the student's completion of both the DNP and PhD degrees whether this is in an integrated DNP/PhD program (pathway 3) or in a sequential DNP to PhD program.

Pathway 5:

BSN → MSN in specialty advanced nursing practice → PhD (time-limited option as MSN advanced specialty programs evolve to DNP level.)

The student with a BSN degree will obtain a MSN degree that includes all didactic and clinical experiences to prepare her/him for certification in an advanced area of nursing practice. The MSN graduate will then transition directly or after some elapsed period of time into a PhD program.

Pathway 6:

MSN (generic/entry-level master's) → PhD

The student with a generic or entry-level MSN may transition directly into the PhD program or enter the PhD program after some period of experience.

Pathway 7:

ADN (RN) (or ADN with a baccalaureate or master's degree in another field) → BSN or MSN → PhD

The ADN graduate, with or without additional baccalaureate or graduate education in a field other than nursing, will obtain at a minimum a BSN or MSN degree prior to entering a PhD in nursing program.

Pathway 8:

Baccalaureate or graduate degree in field other than nursing → PhD

An emerging or additional pathway is designed for non-nurses who are seeking a PhD in nursing. These individuals are interested in pursuing a research career that adds new knowledge to the discipline of nursing. Individuals are admitted directly into the PhD program and upon graduation are **not** prepared for RN licensure.

VIII. RECOMMENDATIONS FOR TARGETED AUDIENCES

Nursing science has advanced significantly over the past several decades. Major contributions to the knowledge base have been made by nurse scientists in diverse areas. Despite these advances the profession has not achieved the level of nursing science to which it has aspired. To meet the challenges of an increasingly complex healthcare system now and in the future, the profession will need to redouble its efforts.

The original AACN *Quality Indicators for Research-Focused Programs* were published in 1986. Since that time the number of research-focused programs has experienced tremendous growth while the number of graduates has remained relatively flat. In addition, the number of funded grants and major contributions to nursing science has not grown significantly. Currently there are 120 research-focused doctoral programs in nursing with another 8 in the planning stages (AACN, 2010). This is a troubling situation and one that merits careful consideration by individual deans, their faculties, and the discipline as a whole. With the changes in science, it is imperative that nursing fully participate in interprofessional team science. In addition, advancement of nursing science is needed to support and direct the expanding and changing environment and demographics of nursing practice and health care as a whole.

In the foreseeable future, financial and human resources for research-focused doctoral education are likely to be constrained. Therefore, each dean/director and each faculty member is urged to carefully weigh the resources needed for the continuation or establishment of a quality PhD

program. The elements delineated in this report are intended to provide a mechanism for critical self-evaluation of current or proposed PhD programs with the goal of continuing only those programs that can offer students a program of reasonable quality and that can produce graduates well prepared to contribute to the advancement of nursing science.

The advent of a new terminal professional practice degree—the Doctor of Nursing Practice (DNP), which focuses on the preparation of nurses for practice at the highest levels—has afforded nursing the opportunity to address the preparation of both practitioners and scientists needed to advance the practice of nursing. Deans/directors and their faculties are encouraged to carefully consider the needs of their communities of interest and their resources in determining if a DNP program or a PhD program or both are most fitting for the circumstances of the individual school.

To address the changes occurring in education and health care environments, the overarching recommendations to advance research-focused doctoral education programs in nursing are:

For academia:

1. Adhere to these essential elements and ensure that the critical components are in place.
2. Use these elements in ongoing self-assessment to determine the need for modification, discontinuation of the program, or in considering the feasibility of developing a new program.
3. Create an environment that fosters successful research-focused careers of students and faculty.
4. Commit to achieving diversity goals for students and faculty in research-focused programs.
5. Orient high school and college counselors regarding pathways to careers as a nursing scientist.
6. Accelerate the career trajectory or progression from entry-level education into a research-focused program.
7. Mentor nurses and students early in their careers into research-focused programs.

For government agencies and other funders:

1. Increase monies for research in nursing, research-focused doctoral programs, and PhD student financial support/scholarships for full-time study.
2. Utilize the criteria of the AACN *Future of the Research-Focused Doctorate* as a component in evaluating the adequacy of resources of applications for training fellowships.

For professional organizations:

1. Advocate for increased funding for doctoral research and education programs.
2. Assist in the dissemination of these essentials.
3. Develop a tool or document based on these essentials and recommendations that outlines the hallmarks of research-focused programs for students to use in selecting a research-focused program.

4. Develop a tool/document to assist students in selecting an employment site and plan a career as a new graduate.
5. Explore the feasibility of developing a mechanism to evaluate the impact of the recommendations in this document.

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TASK FORCE ON THE FUTURE OF THE RESEARCH-FOCUSED DOCTORATE

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APPENDICES

APPENDIX A:

DESCRIPTION OF BARRIERS AND FACILITATORS TO INCREASING NUMBER AND DIVERSITY OF STUDENTS AND FACULTY IN RESEARCH-FOCUSED DOCTORAL PROGRAMS

A. General Barriers and Facilitators to Developing a Research Career

Barriers

Some general barriers are those that apply to nursing such as the confusion on the part of other scientists about the nature of nursing science and the historical images of nursing that do not support a career in science.

Barriers to development of a research career intrinsic to the student include:

- Length of time between student entry into a master's program and completion of a PhD resulting in a large number of nurses graduating from doctoral programs at an older age.
- Potential students may not perceive research as important, prestigious, or exciting and thus not pursue the PhD.
- The lack of clarity about the contributions of nursing science to patient care may not be well explicated and understood by potential students and the nursing community-at-large.
- The large differential in salary between research career and careers in industry may preclude students from seeking a PhD.
- Students may not have clarity around the contributions of nursing to patient outcomes and health care in general.
- State board requirements for a master's or doctorate in clinical area of nursing may not promote seeking a research doctorate.
- Students who are certified in a specialty may find it difficult to complete acquisition of clinical practice hours for continuing certification while pursuing a PhD.
- Students may not have a complete understanding of the characteristics needed to become a research scholar and, thus, enter a program without a skill set to successfully complete the PhD and pursue a research career.
- Due to financial constraints, students may not be able to pursue PhD education full-time and thereby reduce the amount of time for a career as a nursing scientist.
- Students may be unwilling/unable to relocate to pursue doctoral education in their desired specialty or area of interest.

Barriers to development of a research career related to faculty include:

- Inadequate numbers of faculty with a program of research to mentor doctoral students and new PhD graduates.
- Workload of new faculty that does not provide time to develop research.

- Lack of an appropriate match between the faculty mentor and the student thereby compromising the mentorship relationship.

Barriers to development of a research career related to program include:

- Lack of funding for emerging scientists.
- Mentorship activities not rewarded by many universities.
- Lack of an intellectual community on the university campus.
- Few slots exist for funding post-docs and pre-docs.

Facilitators

Facilitators to development of a research career intrinsic to the student include:

- Having a clear focus about their research program and identified area for building a program of research.
- Student knowing what is expected of them during and following PhD study.
- Exposure to and excitement with scientific discovery of potential students and during PhD study.
- Ability to use feedback and constructive criticism.

Facilitators to development of a research career related to faculty include:

- Ability of faculty to provide feedback and give constructive criticism to PhD students.
- Creating partnerships with other scientists in collaboratives and fostering interprofessional science.
- Providing appropriate mentorship and support of risk-taking.
- Setting forth clear expectations for scholarly productivity within the doctoral environment.
- Increasing the recognition of the importance of translational research.

Facilitators to development of a research career related to the program include:

- Funding to allow full-time study during PhD program, including tuition and stipends.
- Partnerships of scientists and practitioners to reduce dichotomy between practice and academia.
- Funding available for emerging scientists.
- Programs to support career development, e.g., RWJ Nurse Scholars, NRSA post docs, T32s.
- CTSA with its emphasis on interdisciplinary research.
- Seminars/communities of scientists, questioning and discovery.
- Focus on scholarly productivity or portfolios (e.g., publications, abstracts, lectures, etc) during graduate education and post-doctoral experience.
- Opportunities to go to other campuses/schools to study.
- Cohort of faculty with current research-funded programs.
- Resources to support students who may need extra support.

B. Barriers and facilitators to increasing the diversity of students and faculty in a research-focused program

Among the U.S. registered nurse population, less than 20 percent of RNs are representative of racial/ethnic backgrounds other than non-Hispanic white (U.S. Department of Health and Human Services [USDHHS], HRSA, Bureau of Health Professions, 2004). Together, African Americans, Hispanic Americans, and American Indians make up more than 25 percent of the U.S. population but only 9 percent of the national nurse population (Sullivan Commission, 2004, p. 2). Hispanic and Native American nurses have the highest percentage of AD graduates and the lowest number of master's or PhD-prepared nurses as compared with white nurses. African Americans and Asian Pacific Islander groups have a higher percentage of BSN graduates and African Americans have a higher percentage of master's- and PhD-prepared nurses as compared with white nurses (USDHHS, 2004). The lack of racial and ethnic diversity of the total nursing population is reflected in the population of PhD students and faculty (Stanley, Capers, & Berlin 2007). Overall, in 2005, about 18 percent of enrolled doctoral students and 10.5 percent of faculty in nursing held minority status (Stanley, Capers, & Berlin 2007).

Facilitators and barriers to increasing diversity among nursing students and faculty are similar to those described in general for nurses in the workforce (Nolan, Wenzel, Han, Allen, Paez, & Mock, 2008; Potempa, Redman, & Landstrom, 2009). Specifically, however, additional facilitators and barriers exist that may be unique to racial and ethnic minority PhD students and faculty (Kim, Holm, Gerard, McElmurry, Foreman, Poslusny, Dallas, 2009; Goepfinger, Miles, Weaver, Campbell, & Roland, 2009; Alicea-Planas, 2009). For example, the lack of diverse nurse researchers limits student access to role models and mentors and thus minority students may not perceive research as important or attainable. A lack of support and resources can thwart the development of minority faculty's program of research to address health disparities, which can subsequently slow the research trajectory (Sullivan Commission, 2004; Stanley, Capers, & Berlin, 2007; Bernal & Ortiz-Torres, 2009). For PhD students and faculty, the lack of an intellectual community needed to work with diverse populations at the nursing academic unit level can limit collegiality and teaming associated with research career successes (Long, 2007; Flanigan, Payne, Simmons, Hyde, Sly, & Zlotnick, 2009). Similarly, facilitators to increasing the diversity among nursing students and faculty include efforts with these attributes: 1) value service and scholarship related to addressing health disparities; 2) create an excitement for scientific discovery by minority researchers and for minority communities; and 3) decrease isolationism (Long, 2007; Flanigan, Payne, Simmons, Hyde, Sly, & Zlotnick, 2009).

Barriers to increasing diversity among nurse researchers intrinsic to the student include:

- Potential students may not perceive research as important, or as having an impact in eliminating health disparities or benefiting their respective communities.
- Lack of diverse nurse researchers, which limits access to role models and mentors.
- Financial constraints and responsibilities to home and families further impede the ability to pursue PhD education full-time and delays timely completion of a PhD program.

Barriers to increasing diversity among nurse researchers related to faculty include:

- Inadequate numbers of racial/ethnic minority faculty members with a program of research to mentor minority doctoral students and new PhD graduates.
- A lack of support and resources needed to develop a program of research to address health disparities.

Barriers to increasing diversity among nurse researchers related to program include:

- Lack of an intellectual community focused on research issues common to working with diverse populations.

Facilitators

Facilitators to increasing diversity among nurse researchers intrinsic to the student include:

- Having a clear focus about their research program and identified area for building a program of research.
- Being able to distinguish and incorporate scholarship and service to the community.
- Exposure to and excitement with scientific discovery by minority researchers and for minority communities during PhD study.
- Ability of the study to receive feedback and constructive criticism.

Facilitators to increasing diversity among nurse researchers related to faculty include:

- Identification of promising diverse racial/ethnic scholars early in their career and providing adequate support and direction to facilitate further the development of research opportunities.
- Creating partnerships with other minority scientists in collaboratives, and fostering interprofessional science to address health disparities.
- Providing additional mentors and support to combat isolation experienced by many minority PhD students.
- Increasing the recognition of the importance of health disparities research.

Facilitators to increasing diversity among nurse researchers related to the program include:

- Funding to allow fulltime study during PhD program, including tuition and stipends.
- Funding available for emerging scientists.
- Institutional awards such as the Clinical and Translational Science Award (CTSA) with emphasis on interdisciplinary and translational research.
- Programs to support career development (e.g., minority supplements at pre- and post-doc levels).
- Recognition and rewards for service as scholarship.

The Task Force supports the recommendations identified by the Sullivan Commission (2004). These recommendations are particularly amenable to system change at the academic component level and critical in developing increased population of diverse nurse scholars and researchers. The recommendations of the Sullivan Commission (2004) are:

- Health professions schools should work to increase the number of multi-lingual students, and health systems should provide language training to health professionals [2.5].
- Key stakeholders in the health system should promote training in diversity and cultural competence for health professions students, faculty, and providers [2.6] (p. 5).
- Health professions schools, hospitals, and other organizations should partner with businesses, communities, and public school systems to: a) provide students with classroom and other learning opportunities for academic enrichment in the sciences; and b) promote opportunities for parents and families to increase their participation in the education and learning experiences of their children [4.1].
- The U.S. Public Health Service, state health departments, colleges, and health professions schools should provide public awareness campaigns to encourage underrepresented minorities to pursue a career in one of the health professions. Such a campaign should have a significant budget, comparable to other major public health campaigns [4.2].
- For underrepresented minorities who decide to pursue a health profession as a second career, health professions schools should provide opportunities through innovative programs [4.3].
- Baccalaureate colleges and health professions schools should provide and support “bridging programs” that enable graduates of two-year colleges to succeed in the transition to four-year colleges. Graduates of two-year community college nursing programs should be encouraged (and supported) to enroll in baccalaureate degree-granting nursing programs [4.4].
- Colleges, universities, and health professions schools should support socio-economically disadvantaged college students who express an interest in the health professions, and provide these students with an array of support services, including mentoring, test-taking skills, counseling on application procedures, and interviewing skills [4.7].
- Diversity should be a core value in the health professions. Health professions schools should ensure that their mission statements reflect a social contract with the community and a commitment to diversity among their students, faculty, staff, and administration [4.10].
- Health systems and health professions schools should use departmental evaluations as opportunities for measuring success in achieving diversity, including appropriate incentives [4.11].
- Health systems and health professions schools should have senior program managers who oversee: a) diversity policies and practices; b) assist in the design, implementation, and evaluation of recruitment, admissions, retention, and professional development programs and initiatives; c) assess the institutional environment for diversity; and d) provide regular training for students, faculty, and staff on key principles of diversity and cultural competence [4.12].
- Health professions schools should increase the representation of minority faculty on major institutional committees, including governance boards and advisory councils.

Institutional leaders should regularly assess committee/board composition to ensure the participation of underrepresented minority professionals [4.13] (p. 8).

- Health systems and health professions schools should gather data to assess institutional progress in achieving racial and ethnic diversity among students, faculty, administration, and health services providers, as well as monitor the career patterns of graduates [6.1].
- Health professions schools and health systems should have strategic plans that outline specific goals, standards, policies, and accountability mechanisms to ensure institutional diversity and cultural competence [6.2] (p. 11).

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