Nurse Support Program II (NSP II)

Outcomes Evaluation FY 2016–FY 2020 and

Final Recommendations for Future Funding

December 11, 2019

This document contains the final staff recommendations for the Nurse Support Program II.

Nurse Support Program II (NSP II) Outcomes Evaluation FY 2016-FY 2020 and Recommendations for Future Funding

Background

The registered nurse (RN) workforce is the single largest group of health professionals, with more than three million nationally and 54,000 employed in the State of Maryland (DLLR, 2018). Changes in the nursing workforce and profession invariably impact health care systems. The Maryland Health Services Cost Review Commission (HSCRC) recognized the importance of nursing to the health of the State when it created the first Nurse Education Support Program in 1986, followed by implementation of the first phase of the Nurse Support Program I (NSP I) in June 2001, to address the short and long-term issues of recruiting and retaining nurses in Maryland hospitals. NSP I has been funded over 19 years with the most recent program evaluation and renewal in 2017. The HSCRC established the Nurse Support Program II (NSP II) on May 4, 2005, to increase Maryland's academic capacity to educate nurses [2006, chs. 221, 222]. The NSP II, administered by the Maryland Higher Education Commission (MHEC) in collaboration with the HSCRC, has been funded for 15 years and is complementary to the NSP I, the hospital-based program. The NSP I and NSP II are each funded through pooled assessments totaling up to 0.1 percent of hospital regulated gross patient revenue for the NSP I noncompetitive hospital requests and the NSP II competitive institutional grants with faculty-focused statewide initiatives. In 2016, Senate Bill (SB) 108 was passed to remove the term "bedside" nurse from the statute to allow NSP I and II to focus on improving the pipeline of nurses with the skills necessary to keep pace with a rapidly changing health care delivery system.

NSP II is designed to increase nursing graduates and mitigate barriers to nursing education through institutional and faculty focused initiatives. The program employs an effective three-prong strategy to increase the number of nurses, improve quality of care, and reduce hospital costs. These goals are achieved by 1) growing the number of nursing lecture and clinical faculty, 2) supporting schools and departments of nursing in strengthening academic capacity and curriculum, and 3) providing support to enhance nursing enrollments and graduation for an adequate supply of nurses to meet the demands of Maryland's hospitals and health systems. NSP II has been funded over the past five years, including a carryover balance from FY 2015, with approximately $90 million for FY 2016 – FY 2020.

In 2012, the Nurse Support Program I and II initiatives were aligned with the Institute of Medicine (IOM) recommendations in its *Future of Nursing* report and included the following aims:

1. Ensuring nursing educational capacity for Nursing Pre-Licensure Enrollments and Graduates, including Associate Degree in Nursing, Bachelor of Science in Nursing (BSN), Master of Science Entry and Second Degree BSN Entry preparation for licensure

by the National Council Licensure Examination for Registered Nurses (NCLEX-RN) to determine safety of new graduate nurses to enter practice.

2. Advancing academic preparation of entry-level nurses and experienced nurses to meet the needs of hospitals and health systems for a higher proportion of registered nurses with a Baccalaureate (BSN) or higher degree in Nursing.

3. Increasing the number of nurses and nurse faculty with graduate education and doctoral degrees to prepare them as leaders, researchers, and educators in academic and clinical settings, and advanced practice nurses.

4. Building collaborations between nursing education and practice for improved nursing competency through seamless academic progression and lifelong learning to improve patient outcomes and satisfaction.

5. Developing statewide resources and models for clinical simulation, leadership, inter-professional education, alternative clinical practice sites, and clinical faculty preparation.

6. Ensuring a cadre of qualified faculty and clinical nursing instructors with efforts to provide graduate educational support, recruit new faculty, retain experienced educators, and increase the number of certified nurse faculty in the specialty practice of nursing education.

7. Advancing the practice of nursing in provision of primary services as nurse practitioners, nurse midwives, nurse anesthetists, and clinical nurse specialists.

8. Providing for the nursing workforce data infrastructure for future workforce analysis.

This investment has resulted in Maryland being recognized as a leader in advancing practice and educational initiatives for improved nurse competency and better patient outcomes. This report will update the Commission on the current state of nursing, the progress of the NSP II, and provide recommendations for the future of the program.

Major NSP II Achievements

This report contains the analysis of nursing program outcome data using the revised nursing and organizational metrics instituted in 2015 to assess progress in achieving these NSP II aims. Program achievements and areas for continued guidance and improvement are highlighted below and in the following sections of this report.

1. Expanded NSP II opportunities to 558 hospital-based nurses across seven programs.
2. Increased the first time pass rates for NCLEX-RN nursing licensure by 8.51 percent.
3. Increased the number of doctoral degree completions by 78 percent, exceeding the goal of 50 percent set by IOM.
4. Improved time to completion of Associate to Bachelors in Nursing (ATB) by 50 percent, with an estimated cost saving of approximately $13K per new nurse graduate.
5. Between FY 2018 and FY 2019, increased number of nurse faculty with Certified Nurse Educator credentials by 55 percent.

3

6. Provided graduate degree tuition support for 26 hospital-based professional development specialist nurse educators and 224 new nursing program instructors.
7. Expanded training for 343 nurse faculty and 51 hospital educators; increasing by 12 percent the number of nurses accessing clinical simulation lieu of clinical sites.
8. Increased by 60 percent the proportion of BSN-prepared nurses with the skills to meet hospital needs.
9. Provided focused leadership development for 48 nurse faculty and 89 hospital emerging and existing nurse leaders through a year-long leadership program.
10. Provided tuition support and course release time for 63 full time nurse faculty to complete the terminal doctoral degree, resulting in an 89 percent retention rate for teaching positions.
11. Recruited 162 new nurse faculty into full-time positions, with 93 percent retention rate.
12. Maryland Nursing Articulation Education Agreement (originally established in 1985) for seamless academic progression for Licensed Practical Nursing to Associate Degree Nursing to BSN was revised and updated in 2017.
13. Maryland Nursing Workforce Center was formally established and joined 34 other states in the National Forum of State Nursing Workforce Centers.

Maryland is a Leader in Nursing Education and Practice

The *U .S. News and World Report* (2019) recognized Maryland with two nursing graduate programs in the top 10 in the United States for *Best Nursing Schools*. Johns Hopkins University School of Nursing (JHUSON) was recognized for being #1 for Doctor of Nursing Practice and Master of Science in Nursing. The University of Maryland School of Nursing (UMSON) and JHUSON were also recognized repeatedly in the top 10 for Clinical Nurse Leader, Nurse Practitioners in Family Care, Adult Acute, Adult Primary Care and Psychiatric Mental Health; along with *Best Nursing Schools* in the areas of Nurse Anesthesia, Nursing Informatics, and Nursing Administration.

The Maryland Nurse Residency Collaborative (MNRC) was recognized as a leader under the auspices of the Maryland Organization of Nurse Leaders (MONL) in 2019 when all 40 hospitals and health systems in the state required a nurse residency program for all new graduate nurses. Maryland is the first state in the nation to meet this *Future of Nursing* (IOM, 2010) recommendation and goal of the American Academy of Nursing. All of Maryland's acute care hospitals now fund and offer a 12-month statewide standardized nurse residency program.

The National League for Nursing (NLN) recognized Maryland for statewide leadership through NSP II, at the direction of the Maryland Council of Deans and Directors of Nursing Programs, for focused efforts and incentives to increase the number of certified nurse educators (CNE®) across all nursing education programs. Recent figures indicate Maryland has twice the number of new CNEs completing the credentialing process as any other state.

Excellence in education and practice are the two primary overarching goals of the Nurse Support Program. Programs are directed at building educational capacity and strengthening nurse educators for an adequate supply of well-prepared nurses for the hospitals and health systems.

Nursing Workforce Projections

Nursing workforce shortage estimates vary widely. Reports range from the worst nursing shortage since the 1960's initiation of Medicare and Medicaid by 2025 (Buerhaus, et al., 2009); to regional RN shortages of about 500K across the country between 2016 and 2030, with the most intense shortfalls in open positions occurring in the South (about 250K) and West (about 240K) (Zhang, X, et al., 2018). Five years ago, a U.S. Health Resources and Services Administration (HRSA) report projected that Maryland would be the only state among its geographic neighbors to experience a shortfall of 12,000 RNs (HRSA, 2014) while another more recent report published two years ago predicted a surplus of 12,100 RNs in Maryland (HRSA, 2017). Although progress has been made, efforts need to be continued to ensure a strong pipeline of entry level nurses.

A leading national nursing workforce researcher, Dr. Peter Buerhaus, and his team of economists found a near balance in supply and demand for RNs nationally, but advised that there are many variables that impact these figures, including nursing career decisions of the youngest nurses; the uncertainty of regional forecasts as nurses move between regions; and the effects of RNs joining temporary staffing agencies (Buerhaus, et al., 2017). HRSA continues to explore systematic differences in state-based administrative data and analyze how each model handles entry to practice output. In fact, all researchers agree that "co-monitoring changes in RN entry is the single most important factor that affects each model and hence accuracy of its projections" (Auerbach, et al., 2017, pg. 294). Researchers are encouraging caution when using forecast models for policy and decision-making, as nursing shortages are highly sensitive to multiple variables and difficult to pinpoint beyond regional trends.

Many of the national data models utilize surveys, while state-level data is more granular; it includes the actual number of nurse graduates, the number of newly licensed nurses entering the profession, and changes in the educational skill level of the nursing workforce. The number of first-time NCLEX-RN testers may be a better reflection of the number of new nurses in Maryland, since RN entry to practice is the most important factor affecting projections of the nursing workforce supply (Figure 1). Testing candidates may be graduates of an Associate Degree in Nursing, Bachelor of Science in Nursing (BSN), second degree BSN, or entry-level Master of Science in Nursing program.

Over the past five years, from FY 2015 to FY 2019, the number of first-time testers has declined, possibly due to factors such as program changes, an improved economy, or the focus on increasing the BSN or higher entry-level nurse. However, the percent of first-time testers passing the licensure examination has improved. The Maryland Board of Nursing (MBON) scores for NCLEX-RN pass rates indicate the proportion of first-time testers who passed on the

5

first attempt increased by 8.51 percentage points for all MD programs, compared to 5.82 percentage point increase nationally (Table 1).

Figure 1. Maryland vs US for First-Time NCLEX-RN Candidates, FY 2015-FY 2019

Graduated Program		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
MD BSN and Master's Entry Programs	# Tested	1,277	1,202	1,124	1,034	1,172
	# Passed	994	994	956	916	1,018
MD ADN Programs	# Tested	1,658	1,557	1,457	1,316	1,375
	# Passed	1,355	1,291	1,252	1,145	1,245
Total for MD Programs	# Tested	2,935	2,759	2,581	2,350	2,339
	# Passed	2,349	2,285	2,208	2,061	2,071
Total for U.S. Programs	# Tested	159,528	161,156	159,419	157,001	168,277
	# Passed	131,666	135,276	137,446	137,865	148,688

Source: Maryland Board of Nursing, National Council State Boards of Nursing, and Pearson Vue, All Maryland RN 1st time candidates who graduated from a Maryland nursing program and tested in any U.S. jurisdiction.

In 2018, *American Journal of Medical Quality* article reevaluated a previous supply and demand methodology using more recent workforce data and ranked states on projected RN shortages in 2030. In the article, Maryland was ranked 32 out of 50, and the nursing workforce shortage projected for 2030 was 9,745 nurses (Zhang, X, et al., 2018). The State cited with the nation's best nursing supply vs. demand balance utilized three best practices: 1) funding a permanent nursing workforce center to study the state level dynamics, 2) expanding enrollments in nursing programs and, 3) providing incentives for newly licensed nurses who practice in facilities for more than two years after graduation. Of those three best practices listed, NSP II has achieved measures to support two areas: increased enrollments, and a nursing workforce center. NSP I provides funding support for the nurse residency program as an incentive for newly licensed nurses.

Over the past two years, the University System of Maryland (USM) Health Care Workforce Working Group convened subgroups to examine four areas of urgency in health care education: 1) nursing articulation and collaboration, 2) clinical partnerships and placements, 3) inter-professional education, and 4) simulation facilities. The NSP II program evaluation committee agreed that the program is aligned with the recommendations in the USM report, *Strengthening Maryland's Health Care Workforce*. To address concerns in the nursing articulation and collaboration area, the Maryland Nursing Education Articulation agreement was updated in a collaborative effort in 2017. The NSPII program address the concerns regarding inter-professional education and simulation resources, as both are provided to all nursing programs and hospital educators. The remaining area of concern is the shortage of clinical placements, particularly the increased numbers of out-of-state nursing programs utilizing Maryland's clinical sites, and changes in student's clinical training opportunities at hospitals.

Competitive Institutional Grant Program and Statewide Initiatives

The NSP II supports two types of programs: Competitive Institutional Grants Program and Statewide Initiatives. Fifteen community colleges and thirteen universities across all geographic regions and types of programs in Maryland were encouraged to participate in the NSP II-funded initiatives. A brief description of each type of program follows.

Competitive Institutional Grant Program

These grants are designed to increase the structural capacity of Maryland nursing schools through shared resources, innovative educational designs, and streamlined processes to produce more nurse faculty, and undergraduate and graduate nurses. Activities may include the establishment of new degree programs, curriculum enhancement and redesign, simulation and other productivity-enhancing instructional technologies. These grants also contribute to the creation of a more diverse nursing faculty and workforce as well as preparing graduate-level nurses to serve as lecturers and/or clinical faculty at Maryland's higher education institutions. All grant recipient project directors are required to disseminate their work through publications in peer-reviewed journals or presentations to fellow nurses in Maryland and nationally. NSP II presentations have been made to organizations such as the Maryland Nurses Association (MNA), MONL, Maryland Action Coalition (MDAC), MNRC, NSP II project director meetings, or other professional nursing conferences. Each year, program updates from grant recipients and publication citations are added to the Nurse Support Program website.

Statewide Initiatives Program

These initiatives include the New Nurse Faculty Fellowships (NNFF), the Nurse Educator Doctoral Grants for Practice and Dissertation Research (NEDG), the Hal and Jo Cohen Graduate Nursing Faculty Scholarship (GNF) and the Academic Nurse Educator Certification (ANEC). The NNFF provides funding for newly hired nursing faculty to support their research and teaching. The funds are used to assist faculty in acclimating to the academic culture, developing in their new role, and supporting their retention. Research suggests that lack of time and money are key barriers to doctoral degree completion. The NEDG address this barrier by providing funds to support current faculty who are enrolled in their final phase of doctoral study (completing their dissertation or capstone project to facilitate degree completion). NEDG has positively impacted the number of nurse faculty with terminal degrees. The GNF scholarship provides powerful incentives to pursue graduate-level education and teach in the classroom and/or clinical settings for nursing education programs, or within healthcare organizations as hospital educators or professional development specialists.

Program Evaluation Methodology

The NSP II completed a program evaluation in 2014 after the first 10 years of funding and was approved for an additional five years of funding through FY 2020. At the request of the HSCRC, MHEC and HSCRC staff initiated a comprehensive program review in January 2019.

Assistance was provided by an experienced NSP II Program Evaluation committee with representatives from all geographic regions and types of nursing programs. This group met over a nine month period culminating with strategic planning sessions in September and October that included the following organizations:

- Maryland Hospital Association,
- Maryland Action Coalition,
- Maryland Organization of Nurse Leaders,
- Maryland Nurse Residency Collaborative,
- Maryland Nurses Association,
- Maryland Council of Deans and Directors of Nursing Programs,
- Maryland Nursing Workforce Center,
- Maryland Board of Nursing,
- Statewide Academic - Hospital Practice Partnership Committee, and
- HSCRC NSP I Advisory Board

NSP II competitive institutional grant recipients were instrumental in the collection of project outcomes data and collaborated with nurse executive leaders on hospital-based measures. Data were collected and compiled for all NSP II funded projects for all years of activity for which data were available. Both quantitative and qualitative analyses were conducted, most notably, descriptive statistics, case study, and thematic analysis. Outcomes were compared to project goals. A summary of important outcomes is discussed in the following section. Findings on the most successful strategies utilized by NSP II and suggested revisions for improvement are included in the review of activities.

NSP II PROGRAM EVALUATION AND OUTCOMES 2016-2020

Competitive Institutional Grants Awards: by Geographic Location, Amount, and Project Type

Five rounds of competitive institutional grants were conducted since July 2015. A total of $74 million was awarded through a competitive review process for 106 multi-year projects. Thirteen community colleges and eleven universities received these funds. Grant recipients included schools or departments of nursing at public universities, including the State's historically black institutions, independent colleges, universities and community colleges. The distribution of awards was geographically diverse: Western Maryland (3), Eastern Shore (3), Northern Maryland (3), and Southern Maryland (1). The remaining institutions are located in the central region of the State and Baltimore City. Figure 2 displays the amount funded over the last five fiscal years by project type.

Figure 2: NSP II Competitive Institutional Grants by Initiatives Awarded
FY 2016 - 2020
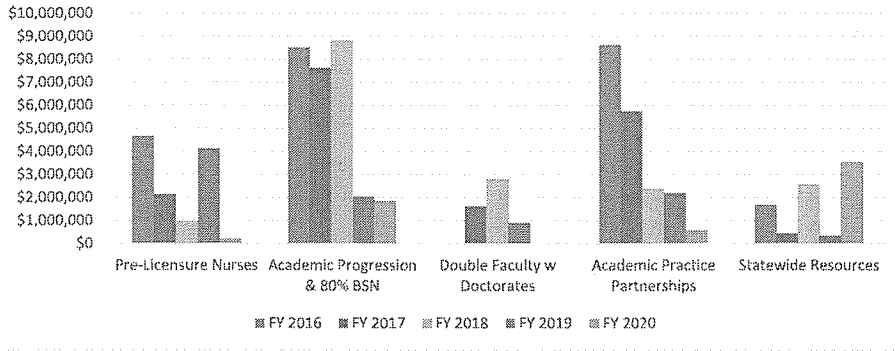
The funds were released to recipients in installments over the life of the grant, contingent upon adequate yearly progress. Of the 106 projects funded since FY 2016, 47 have concluded, allowing for a detailed analysis of the strategies used by the most successful awardees. Fifty-nine (59) awards remain open, some with annual payments extending into FY 2022 (with funds accrued through FY 2020). While these projects have not yet concluded, annual outcomes to-date are included in the data analysis.

Competitive Institutional Grants: Progress by Initiative

Competitive institutional grants were awarded for projects addressing the following initiatives:

1) Ensuring nursing educational capacity for nursing pre-licensure enrollments and graduates,
2) Advancing academic preparation of entry-level nurses and existing nurses to meet the needs of hospitals and health systems (80 percent BSN),
3) Doubling the number of nurses and nurse faculty with doctoral degrees,
4) Academic/practice partnerships, and
5) Developing statewide resources and models for clinical simulation, leadership, inter-professional education, alternative clinical practice sites, and clinical faculty preparation.

Progress on each initiative are presented in the paragraphs below.

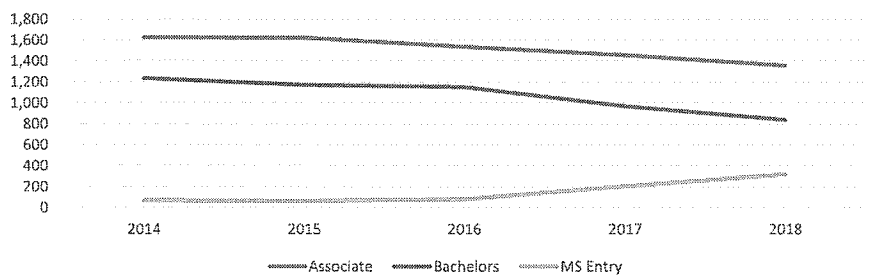*Initiative #1: Pre-Licensure Nursing Graduates*

Over the last five years, a little over $12 million have been funded to support pre-licensure nursing education. Maryland's nursing graduate data demonstrates an increase in the overall

9

education of the nursing workforce, which is consistent with national trends. Declines in enrollments and graduations from Associate Degree Programs may reflect alignment with IOM initiatives and changing hiring practices of hospitals and healthcare organizations.

However, enrollments in BSN and MS Entry nursing programs have been steadily rising. There are several factors behind this movement in RN education: 1) hospitals are aware of better patient outcomes associated with BSN or higher prepared RNs; 2) economic incentives reward hospitals for improved quality and outcomes; 3) requirements to have a higher proportion of BSN-educated RNs for the Magnet Recognition Program®, and 4) recommendation by the Institute of Medicine (2010) that 80 percent of nurses be BSN-prepared by 2020 (Buerhaus, et al., 2017).

New pre-licensure programs, called Master of Science (MS) Entry, address the needs for well-prepared professional nurses who can advance more quickly into leadership roles and advanced practice. There are currently two MS entry programs, with another in the planning stages. The second MS Entry program replaced an undergraduate BSN program. With full transition from undergraduate BSN to MS Entry, the pre-licensure graduate data will continue to increase (Figure 3).

Figure 3: Maryland Pre-licensure Nurse Graduates, FY 2014 -2018

Source: Maryland Higher Education Commission, Enrollments and Graduates for all pre-licensure programs-Associate, Baccalaureate of Science and Master's Entry in Nursing Degrees

Initiative #2: Academic Progression through Associate to Bachelors (ATB) and Graduate Education

Alternative academic progression models have been among the top-funded ($28.8 million) competitive institutional grant projects. In the Associate to Bachelor's (ATB) model, a student nurse enrolled at a community college can concurrently enroll in a university, allowing completion of both an Associate and BSN degree within three years. This minimizes educational costs and time to degree completion. Integrating nursing curricula for community college and university programs without redundancy is a major challenge. Since 2015, 12 nursing programs

10

have received approximately $14 million for a variety of competitive institutional grants to implement the ATB partnership concurrent enrollment model, dual enrollment, or alternate routes to the BSN with good results.

Across Maryland, universities and community colleges are working together through funded projects to promote the BSN with Associate to Bachelor's (ATB) agreements for seamless academic progression. A concerted effort was necessary to ensure access to BSN education through targeted strategies, streamlined financial aid processes, and a unified message with hospital leaders that newly licensed nurses should make every effort to complete the BSN within 3-5 years of employment at a Maryland hospital. In 2017, MHEC with the Maryland Council of Deans and Directors of Nursing Programs (MCDDNP), revised and updated the Maryland Nursing Articulation Education Agreement (1985) for seamless academic progression for Licensed Practical Nursing to Associate Degree Nursing to BSN.

NSP II staff worked with the Maryland Longitudinal Data System (MLDS) at MHEC to measure ATB completions and determine time and cost savings to the individual nursing student. Early data are encouraging. Approximately one in five pre-licensure nurses graduate from community college with Associate Degree in Nursing and completes the BSN within one year. Using the ATB model has shown a 50 percent improvement in the time to completion of the Associate to Bachelor degree and an approximate cost saving in tuition of $13,000 per student.

The seamless transition is expected to result in cost savings to newly licensed registered nurses and the hospital where they work; fewer courses will be needed to complete the BSN, thereby reducing the amount of tuition reimbursement. Cost savings are much higher for ATB students enrolled in a private university partnering with a community college, compared with attending the private university's traditional BSN program. This cost saving is transferred to hospitals in reduced tuition expenses for newly hired nurses. Along with cost savings, the ATB model is providing much needed access to BSN programs for those qualified applicants who were not accepted to traditional BSN programs for lack of space. Statewide dissemination of best practices in the ATB Model is continuing through ongoing ATB Coordinator meetings.

Maryland has made significant progress toward increasing the proportion of nurses with a BSN working in hospitals and healthcare organizations to 80 percent (Figure 4). The Campaign for Action Maps, funded through the AARP and Robert Wood Johnson Foundations, used American Community Survey data to display national trends in BSN-prepared nurses. Maryland's average was about 60 percent and is among 12 states with over 60 percent BSN prepared nurses, outpacing the national average (55.9 percent) and neighboring states Virginia, West Virginia, and Pennsylvania (Courville & Green, 2019).

11

Figure 4: Comparison of Number of RN to BSN Graduates Annually for Maryland and U.S.
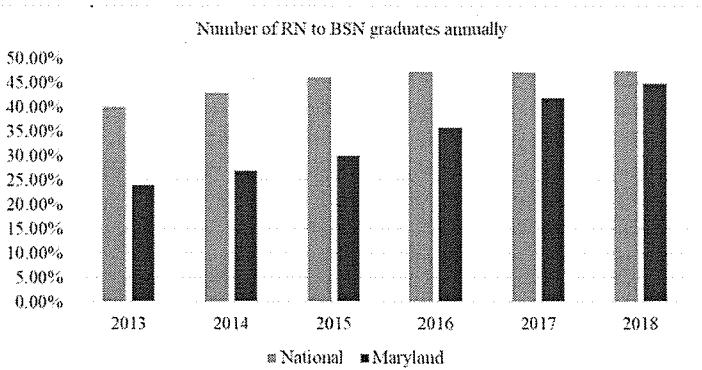
Number of RN to BSN graduates annually

■ National ■ Maryland

Along with this promising trend, hospitals are reiterating this message with their hiring practices. In a survey of Maryland hospital nursing leaders (MCSRC, 9/10/19), most Maryland hospitals (54 percent) require the newly hired nurse to be enrolled in a BSN program prior to or within 6-12 months of starting work and complete it within three years. Another 21 percent are developing similar policies, and 25 percent do not have a policy on BSN completion.

Research on healthcare quality also indicate that BSN-prepared nurses improve patient outcomes. A recent study involving five states (including New Jersey and Pennsylvania) found that for each 10 percent increase in a hospital's proportion of BSN prepared nurses, there was a 24 percent increase in the odds of surviving a cardiac arrest to discharge with good cerebral performance (Harrison, et al., 2019). The findings indicated that a higher level of surveillance, quicker recognition of a deteriorating condition, and intervention with life-saving measures were important indicators to minimizing potential neurologic damage (Harrison, et al., 2019).

The American Nurses Credentialing Center's Magnet Recognition Program is acknowledged as the premier international recognition of organizations that were able to attract and retain nurses, keeping nurse vacancy and turnover rates low, and improving patient outcomes. Magnet® designation validates the highest-level nursing standards within the hospital (Graystone, 2018). Preliminary research has shown improved patient experiences in Magnet® designated hospitals compared to non- Magnet. The Magnet® designation is also associated with hospitals that can attract and retain high-quality nurses who are more satisfied and committed to their work environments (McCaughey, et al., 2018). In 2019, eight (8) hospitals in Maryland have successfully achieved Magnet® and one has achieved Pathway to Excellence® designation with funding from the NSP I. Of those hospitals, four newly achieved Magnet® or Pathway to

12

Excellence® designation and three were re-designated. Seventeen hospitals are pursuing either Magnet® or Pathway to Excellence® designation. The Pathway to Excellence® designation was achieved by UM Upper Chesapeake Health Medical Center. The ANCC Magnet® designated hospitals are listed below:

- Anne Arundel Medical Center,
- MedStar Franklin Square Medical Center,
- Mercy Medical Center,
- Meritus Medical Center,
- Suburban Hospital,
- The Johns Hopkins Hospital,
- University of Maryland (UM) Medical Center, and
- UM Shore Regional Health.

An examination of the U.S. Agency for Healthcare Assessment of Healthcare Providers and Systems (HCAHPS) scores found overall hospital ratings were significantly higher in Maryland hospitals with Magnet or Pathway designation. In addition, the Maryland Hospital Acquired Conditions Potentially Preventable Complications (PPC) differences were statistically significant (Figure 5 and 6).

Figure 5: Magnet® vs Non-Magnet vs Journey to Magnet Hospitals: HCAHPS, CY 2017

| | ANOVA Tests | | | | | Post Hoc Tests | | |
HCAHPS	Total (n=46)	Magnet (n=9)	Non-Magnet (n=26)	Journey (n=11)	p-value	Magnet vs. Non-Magnet	Magnet vs. Journey	Non-Magnet vs. Journey
Cleanliness of Hospital Environment	68.4 (6.7)	69.9 (5.8)	68.3 (7.6)	67.5 (5.3)	0.724	0.8391	1.2611	0.4221
Communication with Nurses	76.3 (5.3)	79.3 (2.4)	75.7 (5.8)	75.2 (5.2)	0.149	2.5027	2.8237	0.3211
Communication with Doctors	77.6 (3.7)	79.3 (2.3)	77 (4.3)	77.5 (2.7)	0.284	2.1925	1.795	0.3975
Responsiveness of Hospital Staff	61.4 (6.3)	63.9 (4.5)	61.8 (6.8)	58.5 (5.6)	0.151	1.2204	3.0765	1.8561
Communication about Medicines	60.3 (5.2)	63.4 (3.1)	59.8 (5.7)	58.8 (4.3)	0.102	2.5968	3.2688	0.672
Discharge Information	86.5 (3.1)	86.9 (1.2)	86.6 (3.1)	85.8 (4.2)	0.72	0.3505	1.2031	0.8525
Transition of Care	48.8 (4.3)	51.2 (3.8)	48.7 (4.2)	46.9 (4.2)	0.076	2.1747	3.7075*	1.5328
Overall Rating of this Hospital	66.7 (6.7)	71.4 (5.8)	66.2 (5.7)	64 (8)	0.037	2.916	4.1331*	1.2172
Quietness of Hospital Environment	56.2 (6.6)	57.7 (7.2)	55 (6.8)	57.9 (5.3)	0.356	1.4551	0.1304	1.5855
Willingness to Recommend this Hospital	65.2 (12.7)	71.8 (8.1)	63.6 (14.6)	63.5 (9.8)	0.224	2.3012	2.3355	0.0343

Note: * indicates p-value <.05; Tukey's HSD tests were reported in post hoc tests
Source: HSCRC HCAHPS data with SPSS by M. E. Mills, 9/10/19

Figure 6: Magnet® vs Non-Magnet vs Journey to Magnet Hospitals: PPC, FY 2017 & 2018

PPC	ANOVA Tests					Post Hoc Tests		
	Total (n=48)	Magnet (n=9)	Non-Magnet (n=22)	Journey (n=17)	p-value	Magnet vs. Non-Magnet	Magnet vs. Journey	Non-Magnet vs. Journey
Total Observed PPC in 2017	18.5 (14.7)	29.6 (24.1)	14.5 (8.8)	17.8 (12.2)	0.030	4.0597*	3.154	0.9057
Total Case-mix Adjusted Rate in 2017	5.1 (6.6)	3 (0.6)	4.8 (5.1)	6.5 (9.5)	0.425	1.0335	1.9945	0.9611
Total Observed PPC in 2018	15 (12.1)	23.8 (16)	11.1 (8.9)	15.4 (11.5)	0.026	4.1492*	2.7652	1.384
Total Case-mix Adjusted Rate in 2018	4.6 (5.9)	3.1 (1.8)	3.5 (2.9)	6.9 (9.1)	0.136	0.2294	2.458	2.2286

*Note: * indicates p-value <.05; Tukey's HSD tests were reported in post hoc tests*
*Source: HSCRC PPC data with SPSS by M. E. Mills, 9/10/19*

Initiative #3: Doubling the Number of Nurses and Nurse Faculty with Doctoral Degrees

NSP II funded $5.3 million for projects focused on doubling the number of nurses with doctoral degrees. The planning committee for the National Academy of Medicine (formerly IOM) convened a public session on March 22, 2019, for the upcoming study, *The Future of Nursing 2020-2030*. Researchers reported that the national goal set in 2010 to double the number of nurses with a doctoral degree had been met. Maryland data supports this increase in doctoral degrees for both Doctor of Philosophy in Nursing (Ph.D.) and Doctor of Nursing Practice (DNP). The DNP curriculum focuses on the preparation of nurses for advanced practice roles, while the Ph.D. is a research-focused degree. The number of nursing doctoral degrees (Ph.D. and DNP) awarded by Maryland schools has grown exponentially in the last five years to a high of 159 in 2018. Demands for those with doctoral degrees in both academic and practice settings will continue to rise. Although doctoral degree enrollments are at an all-time high, there is variation between the types. Consistent with national trends, there is high interest in the practice-focused DNP, and declining interest in the research-focused Ph.D. (AACN, 2019).

A study by Fang and Bednash (2017) found that 56.8 percent of DNP students were already full-time or part-time faculty members. Nurse faculty with dual clinical and academic appointments as advanced practice registered nurses (APRNs) maintain clinical credentials and provide primary care while preparing the next generation of new pre-licensure nurses or serving as preceptors for new APRNs at hospitals and clinical sites.

NSP II met and exceeded the goal of doubling the number of doctoral degree completions from 35 Ph.D. or DNP graduates in 2014 to 159 Ph.D. or DNP graduates in 2018, a 78 percent increase (Figure 7).

**Figure 7: Trends in Nursing
Doctoral Degrees, FY 2014 - 2018**
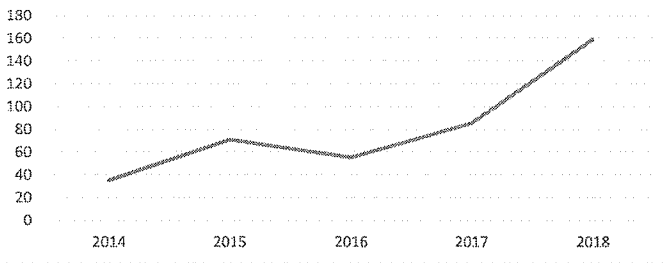
Initiative #4: Academic and Practice Partnerships

The second largest portion ($19.5 million) of NSP II competitive grant funding was awarded to programs for Initiative #4. NSP II programs under this initiative were intended to meet the needs of hospital practice nurses, as well as nurses in academic settings, and include:

- Academic-Practice Partnership Model for graduate degree completion by clinical staff nurses,
- Nurse Leadership Institute (NLI),
- Maryland Clinical Simulation Resource Consortium (MCSRC),
- Eastern Shore Faculty Academy and Mentoring Initiative (ES-FAMI),
- Advanced Practice Nurse Preceptor (APRN) modules, and
- Inter-professional Education (IPE) hospital bedside rounds modules

Descriptions of these programs are described below.

Academic -Practice Partnership Model. A total of 558 hospital registered nurses participated across seven NSP II academic-practice partnership projects. This movement aligns with the recommendations of a study commissioned by the AACN, which examined the potential for enhanced partnerships between academic nursing and academic health centers (AACN, 2016). These new programs were created to provide opportunities across settings for academic nurse faculty and clinical practice nurses to work more closely together. These programs are open to all hospitals, health systems, and schools of nursing through an annual nomination process. Nurses from academia and practice were nominated by health systems at 39 (out of 46) hospitals and 24 (out of 28) nursing programs (Figure 8). At present, nurse leaders in academia and hospital practice are collaborating to develop a set of universal student requirements accepted by all organizations for student clinical site rotation. The intention is to reduce duplication in

15

time and effort by both the hospital education and academic coordinators. Twenty-six nurses in Professional Development Specialist positions at hospitals across the State have received full tuition and fees at an in-state nursing graduate degree program with the opportunity to complete their service obligation in their current educator role at the employing hospital.

Figure 8: Hospital Nurse Participants across Academic Practice Programs

Hospital Region	Acute Care Beds	Total Hospital RN Participants
Western Maryland	729	16
Montgomery County	1,249	19
Southern Maryland	951	16
Central Maryland	2,243	151
Baltimore City	3,609	262
Eastern Shore	574	90
Maryland Total	9,355	558

Source: Maryland Health Care Commission Hospital Acute Beds and NSP II Annual Reports Outcomes Evaluation

NSP II recognized the importance of the academic-practice partnership programs early on through an NSP II funded competitive grant program that expanded from six hospitals to 18 partner hospitals over the multiple year grants. This working relationship is a model for expanding the roles of Clinical Instructors, Faculty and Preceptor resources. The academic-practice partnership model funded at the University of Maryland, School of Nursing includes 18 hospitals located across all five regions of Maryland. Collaboration between the nursing program, Chief Nurse Officer and Nurse Education Coordinators at each partner hospital provided the structure for 235 staff nurses in a combination of RN-BSN, RN-MS and MSN programs for preparation as hospital-based clinical instructors, preceptors and mentors. The program prepares the students for a culture of learning and career advancement in leadership, as well as quality and safety of patient care at the partner hospitals. NSP II proposed two new statewide programs in 2015 to serve nurses in both academic and practice settings across the state. Nurse faculty with expertise in the areas of leadership and clinical simulation led these initiatives based on the *Future of Nursing* recommendations.

Nurse Leadership Institute (NLI). The NLI was formed to promote innovative opportunities to meet the Future of Nursing's recommendation for nurses to lead changes in health delivery and drive patient care solutions. The concept was expanded beyond academic leaders to hospital nurse managers and executives in 2015. To date, 48 nurse faculty and 89 hospital emerging and existing nurse leaders completed a year-long leadership program. Through mentorship, reflective exercises, and a leadership project, nurses develop the skills to lead change and advance health.

16

Maryland Clinical Simulation Resource Consortium (MCSRC). The MCSRC increases the quality and quantity of clinical simulation used in nursing education. The on-site Train-the-Trainer sessions for faculty and hospital-based nurses are coordinated with an expert panel guiding simulation equipment resources allocated to all programs across the state based on nationally recognized benchmarking measures. To date, 394 Simulation Education Leaders (SEL) and Advanced Simulation Education Leaders (ASEL) participated in the three-day sessions with 343 nurse faculty and 51 hospital educators. Faculty achieved levels of preparation from Simulation Education Leaders (SEL 1-3) to the more Advanced Simulation Education Leaders (ASEL). Nine ASEL educators completed the Society for Simulation in Healthcare's Certified Healthcare Simulation Educator (CHSE) credential demonstrating excellence and expertise in multi-modal simulation methodologies including task trainers, high and low-fidelity patient simulators, virtual reality, screen-based simulators, and standardized patients. Utilizing technology and tools, the goals of simulation are threefold: 1) to improve student nurse performance by providing experience working with highly technical equipment in a virtual environment prior to actual clinical experience in a patient care setting; 2) to promote competent care by ensuring comprehensive practice in critical thinking and clinical judgement; and 3) to substitute the number of clinical hours required in active patient care settings, thereby easing the shortage of clinical access opportunities. On average, clinical simulation was used to replace approximately 12 percent of total clinical practice time, with many schools having increased the percent of simulation used in place of clinical hours as they acquired simulation resources and experience in utilizing this educational technology.

Eastern Shore Faculty Academy and Mentoring Initiative (ES-FAMI). The ES-FAMI increases the preparation and availability of clinical instructors to teach in nursing programs by providing a foundation in learning theory and assessment. Established on the Eastern Shore in 2011 as a collaboration between Salisbury University, Chesapeake College, and Wor-Wic Community College, the ES-FAMI has expanded to central and western Maryland to prepare a pool of clinical faculty across the state. The program is delivered online, face-to-face, and in simulated teaching experiences.

Inter-professional Education Resources (IPE). Collaborative practice has been identified as a solution to current challenges of health care, including improving patient safety, quality and outcomes of care; minimizing/decreasing cost; and improving the patient experience. Most accrediting bodies of health professions today require learners to be prepared for IPE practice, yet barriers often exist for teaching multiple disciplines together in IPE settings. The Johns Hopkins University School of Nursing program addresses these barriers through simulations. The Core Competencies for IPE Collaborative Practice, which include 1) shared values/ethics, 2) roles and responsibilities, 3) communication, and 4) teamwork with bedside rounds, provided the

framework for developing four simulations, with actors playing roles to deliver the IPE simulations via video vignettes.

The intent of Initiative #5 is to provide resources for potentially successful projects or concepts that were embedded in the Future of Nursing report that would be available for all nurses in both academic and practice environments. The funding support for Initiative #5 was $8.6 million and provided resources for accreditation, instructional technology, and preparation of clinical instructors, preceptors, and mentoring nursing faculty in multiple in-state settings. In addition, a nurse residency toolkit as developed to provide guidance for all programs to enhance newly licensed nurses' academic progression. Some of the more widely available opportunities are described below.

Nurse Managed Wellness Center for Student Clinical Opportunities (NMWC). The NMWC at Allegany College of Maryland in Western Maryland provides nursing students with opportunities to improve their essential skills and competencies for transitioning to the role of the nurse. In anticipation of decreased inpatient clinical pediatric opportunities, students work with the local Head Start to provide pediatric assessments, including vision, hearing, developmental and physical screenings. Providing the template for the experiences (objectives, learning activity, and evaluation tools), in addition to an opportunity to see it in action (on-site or webinar) makes this a replicable model with the preceptor clinical training. The intent is to reduce the stress on hospital clinical sites and increase enrollments based on creating alternate clinical site options.

Lead Nursing Forward Educator Career Portal (LNF). Salisbury University School of Nursing (SUSON), in collaboration with UMSON, developed a free web resource that connects interested educators with clinical instructor, preceptor, part-time adjunct, and full time faculty opportunities across hospitals and nursing programs. The site (leadnursingforward.org) provides information for nurses and career explorers to learn more about the educator role, different pathways to becoming an educator, and continuing their education. The site also promotes the nurse educator career with photos and videos featuring current nurse educators across Maryland. Through the portal, users can register a profile and also gain access to postings for events such as seminars, job fairs, and conferences.

Maryland Nursing Workforce Center (MNWC). The MNWC was established in July 2018 and became an officially recognized Center at the University of Maryland, Baltimore in November, 2018. The following May, the MNWC was accepted into membership in the National Forum of State Nursing Workforce Centers. The MNWC is intended to improve collaboration among stakeholders and enhance data infrastructure as recommended by the *Future of Nursing* (2010) report and reinforced at the National Academies of Medicine *Future of Nursing 2020-2030* public sessions in 2019. The

MNWC Advisory Committee determined that the top priority is to secure accurate, and timely nursing workforce data from the Maryland Board of Nursing. The MNWC filed a Public Information Act request in March of 2019 to gain access to the data. Unfortunately, this information has not been provided at the time of this report and state-level data regarding the nursing workforce remains incomplete. MNWC will analyze and report on the nurse workforce data with stakeholders once it's received.

Statewide Initiatives Awards: by Program

There were four funding cycles for the nurse faculty focused programs, totaling $16 million. As a requirement of the programs, recipients commit to becoming nursing faculty upon completion of their graduate education; advancing their careers through earning doctoral degrees; joining an institution as a new faculty member; or demonstrating expertise in the specialty practice of nursing education through national certification. Across the State, nurse faculty were awarded $5 million for fellowships, grants and professional development between FY 2016 and FY 2019. Approximately $11 million over the same period was awarded to 250 nurses who enrolled in the graduate degree programs, a requirement for becoming a faculty or hospital-based educator. A description of the outcomes for each program follows.

New Nursing Faculty Fellowships (NNFF). These fellowships assist Maryland nursing programs with recruiting and retaining newly hired faculty by providing funding to pay student loans, attend and present at professional conferences, conduct research, publish work in peer-reviewed journals, and other professional development activities. Each fellowship is funded for three years. Since 2015, 162 new faculty members have been recruited through this program and received a total of $3 million. The retention rate for faculty for the last 3 years is 93 percent; clear evidence of the program's value.

Nurse Educator Doctoral Grants for Practice and Dissertation Research (NEDG). This program provides grants to current nursing faculty (typically instructors or assistant professors) enrolled in doctoral study, who are completing their final scholarly work through a dissertation (Ph.D. or Doctor of Education, Ed.D) or a capstone/scholarly project (DNP). Faculty who have recently completed a doctoral degree are also eligible for this award. Funds may be used to offset research, tuition, student loans, course release time, and other educational costs related to expediting degree completion. Since July 2015, there have been 63 awards totaling $1.6 million. Of these awards, 28 faculty were receiving a Ph.D. (22 PhDs in Nursing and 6 PhDs in other related fields), 28 were receiving a DNP and 7 were completing an Ed.D. This represents approximately 10 percent of the total full-time faculty employed in nursing degree programs, based on NSP II outcomes data. Upon degree completion, recipients are required to provide the abstracts and citations of their dissertation, capstone project paper, and any other published work or scholarly project. Many doctoral projects focused on educational issues in nursing that inform best practices in both academia and clinical practice.

19

Examples include simulation, faculty shortage, teaching modalities, medication errors, mentoring models, civility, and student retention. Maryland Deans and Directors indicate that 9 out of 10 nursing faculty who received the NEDG award remained employed in good standing; an indication of the program's effectiveness in advancing the number of nursing faculty with doctoral degrees and retaining highly qualified faculty.

Hal and Jo Cohen Graduate Nurse Faculty Scholarship (GNF). This program supports registered nurses in completion of their Master's and Doctoral degrees, post-graduate teaching certificate, and coursework to become nurse faculty. The scholarship is for full tuition and fees for Maryland residents to go to a Maryland program, with a service obligation to teach in an in-state nursing program or hospital education department. Recipients who are unable to meet the service obligation must repay the GNF through a bond repayment plan. Since July 2015, approximately 250 recipients have been awarded $11.2 million in scholarships. Most were pursuing Master's Degrees, a pre-requisite for doctoral level study and a minimum requirement of the Maryland Board of Nursing for nursing faculty. Since the GNF's inception in 2007, over 175 recipients have completed their service obligation; 244 are working as Maryland nursing faculty or hospital-based nurse educators in fulfillment of the service obligation; and 68 recent graduates are in an approved deferment or seeking teaching positions at a school or hospital. The remaining students are enrolled in Master's and Doctoral level degree programs. In 2015, based on feedback from Chief Nursing Officers at Maryland hospitals, the guidelines and service commitment for the GNF were revised to include hospital-based nurse educators to attract nursing professional development specialists. At least 26 hospital nurse educators have received GNF funds for tuition and are completing their service at their hospital's education departments at The Johns Hopkins Hospital, Greater Baltimore Medical Center, Howard County General Hospital, Johns Hopkins Bayview Medical Center, University of Maryland St. Joseph Medical Center, Sinai Hospital, and Mercy Medical Center.

Academic Nurse Educator Certification (ANEC) award The ANEC provides recognition and professional development support for full-time nurse faculty across the state who achieved the National League for Nursing's Certified Nurse Educator (CNE) credential or renewed the CNE they already held as required every five years. The CNE certification is a mark of excellence and expertise in the specialty practice of nursing education. A total of 57 faculty received $285,000 across 12 community colleges and 9 universities. To assist faculty in preparing for the CNE examination, NSP II partnered with the NLN to host CNE Workshops taught by Dr. Diane Billings, a national leader in faculty development. Workshop attendees are expected to take the CNE examination within a year. The goal is to double the number of full-time nurse faculty with the CNE credential, a mark of excellence in teaching, pedagogy, curriculum design, and student learning. At the inception of the program, there were 65 certified nurse educators. Since

20

2017, 36 additional full-time nurse faculty were awarded the CNE and 21 full-time faculty completed the requirements to renew the CNE credential. This demonstrated an increase of 55 percent newly credentialed CNEs.

Diversity of the Maryland Nursing Workforce

In accordance with the Education Article § 11-405, Annotated Code of Maryland, the Nurse Support Program Assistance Fund statute states, "the guidelines established under subsection (e) of this section shall provide that a portion of the competitive grants and statewide grants be used to attract and retain minorities to nursing and nurse faculty careers in Maryland." The NSP II program has impacted the diversity in the nursing workforce in several ways. Over the past five years, NSP II has awarded $3.6 million in competitive grants to support diverse students at Historically Black Colleges and Universities, including Bowie State University, Coppin State University, and Morgan State University. The programs were designed to increase student retention, graduation rates, and licensure first-time pass rates.

Based on diversity data provided by the Maryland Longitudinal Data System, 73 percent of recipients of the Hal and Jo Cohen Graduate Nurse Faculty Scholarship program were underrepresented racial and ethnic minorities. Additionally, a report prepared in 2019 for Maryland by the AACN Research and Data Services indicated that the percentage of racial or ethnic minority nursing graduates in Maryland has increased or held steady across all degree programs. Forty-nine percent of Maryland nurse graduates at BSN programs and a little over 40 percent of RN-BSN, Master's and DNP graduates were racial or ethnic minorities in 2018 (Figure 9).

Figure 9: Percentage of Underrepresented Racial and Ethnic Minority Nursing Graduates in Maryland
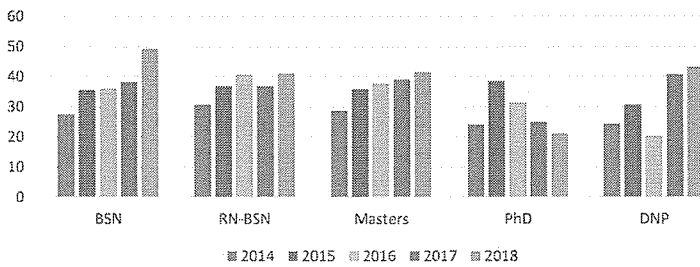
Source: American Association of Colleges of Nursing, Research and Data Services, 2019

The diversity among pre-licensure graduates from all entry-level nursing programs is consistent with the State and national population demographics. This demonstrates that progress is being made to make Maryland's nursing workforce more closely reflect the population they

21

serve (Figure 10). The National League for Nursing's *Biennial Survey of Nursing Schools Academic Year 2017-2018* indicates an increase in enrollment for underrepresented populations, from 27 percent in 2016 to 31 percent in 2018; the highest increases were among African American and Hispanic students.

Figure 10: Comparison of the diversity of pre-licensure RNs in Maryland and US
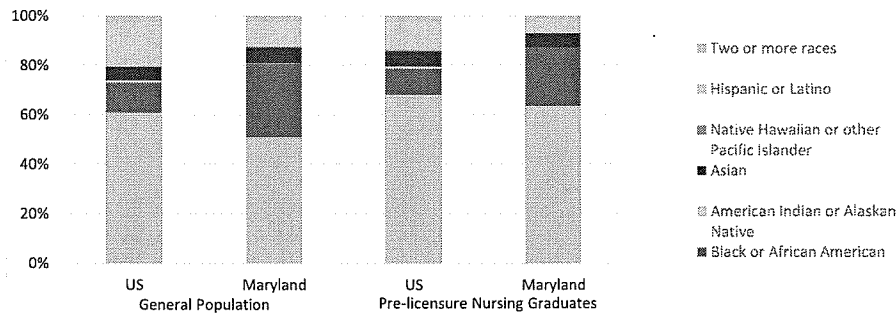
The State of Nursing and Future Issues

There are significant challenges facing the nursing workforce (Buerhaus, et al., 2017). First, is the aging RN workforce and projected retirements. According to a 2018 National Council of State Boards of Nursing and the Forum of State Nursing Workforce Centers report, nearly 51 percent of the RN workforce is 50 years of age or older. One million RNs will retire by 2030 and with their departure, the patient care settings face a significant loss of knowledge and expertise that will be felt for years to come.

Second, aging baby boomers will continue to increase the demand for health care over longer life expectancies. According to the U.S. Census Bureau, the nation's population is estimated to grow by more than 10 percent by 2032, with those over age 65 increasing by 48 percent. Consistent with this trend, Medicare enrollments are projected to grow to 80 Million beneficiaries by 2030.

Third, physician shortages will create the need for more advanced practice nurses to provide primary and rural care within their full scope of practice. There is a projected shortage of between 46,900 and 121,900 physicians by 2032, which includes both primary care (between 21,100 and 55,200) and specialty care (between 24,800 and 65,800). Among specialists such as pathologists, neurologists, radiologists, and psychiatrists, the data projects a shortage of between 1,900 and 12,100 medical specialists, 14,300 and 23,400 surgical specialists, and 20,600 and 39,100 other specialists. One-third of all currently active doctors will be older than 65 in the next

22

decade. There is potential for nurse practitioners prepared in primary care, psychiatric and pediatric specialties that can help ease this shortage, especially in rural areas.

Fourth, we are entering a new era of health reform where hospitals face financial incentives to be accountable for the quality and the total cost of care. This will increase care management activities to avoid readmissions and costly unnecessary use of the emergency departments. RNs with experience in care management, public health, and partnership building will be needed. In addition to these overarching national concerns, there are several other pressing issues of concern in Maryland.

Maryland's nursing programs have responded to industry changes in hospitals and health systems. The Maryland Hospital Association (MHA) concurs with the American Hospital Association (AHA, 2019) citing the aging population, higher complexity of care, improved care coordination, integration of behavioral healthcare with physical healthcare, and improved methods of delivery of care will jointly impact workforce dynamics, access to care, and the clinical work environment. The MHA is in the process of prioritizing the nursing workforce, along with their focus on the health care work environment and violence in the workplace.

Lack of Qualified Nursing Faculty Leads to Limits on Enrollment

Despite this progress, nursing schools continue to turn away qualified students due to shortages in faculty. According to the AACN's *Special Survey on Vacant Faculty Positions* (2018), 1,715 faculty vacancies were identified, an eight (8) percent faculty vacancy rate. In the AACN's *2018-2019 Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing*, nursing schools across the nation turned away approximately 75,029 qualified applicants to baccalaureate and graduate degree programs in 2018, due to insufficient numbers of faculty, classroom space, clinical sites, clinical preceptors, and shrinking budgets (AACN, 2017 a, 2017 b). Compounding the faculty shortage is the "gray tsunami;" the average faculty member is between 51 and 62 years old and more than a third are expected to retire by 2025 (Fang & Kesten, 2017). Annually, Maryland is expected to have 60 full-time faculty vacancies. Despite resources to recruit and retain faculty, the most recent reports indicate 40 full-time vacancies. Each vacancy potentially decreases the capacity to enroll ten additional students. This comes at a time when the number of nurses retiring or leaving the workforce is expected to double over the decade the next decade to 80,000 per year, and reduced capacity is not going to address the problem.

Advancing the Practice of Nursing

According to the American Association of Medical Colleges (2019), there is a shortfall of primary and specialty care physicians. Advanced Practice Registered Nurses (APRNs) are positioned to help meet the demand for these types of healthcare providers. The U.S. Bureau of Labor Statistics (BLS) Occupational Outlook Handbook (OOH) predicts that every state in the U.S. will see an increase in nurse practitioner (NP) position openings, forecasting a 36 percent

increase in the need for NPs between 2016 and 2026 (BLS OOH, 2019). The need for NPs in Maryland is estimated to increase by 31 percent over the same period. This remarkable growth in the workforce will continue for a number of years with current rates of nurse practitioner training (BLS OOH, 2019). Current projections indicate a shortage of 122,000 physician providers by 2032. This is a growing concern, especially in the area of primary care and for medically underserved areas and populations (AAMC, 2019).

RN Vacancy Rates

The RN vacancy rate is trending up across the nation but is holding fairly steady in Maryland. The hospital nurse vacancy rates for Maryland (averaging about eight (8) percent over the last four years) is comparable with 28 percent of other U.S. hospitals, higher than 46 percent of other U.S. hospitals, and lower than 25 percent of other U.S. hospitals. In 2015, sixty percent (60%) of hospitals reported a vacancy rate below 7.5 percent. By 2018, the rate declined to 46 percent. This downward shift, along with rising RN recruitment difficulty (close to 3 months to hire an RN), is a clear indication that the RN labor shortage has arrived (NSU, 2019) (Figure 11).

Figure 11: Comparison of RN Vacancy Rates: US vs Maryland Hospitals

	2015	2016	2017	2018
US RN Vacancy Rates: *Less than 7.5%*	60%	52%	50%	46%
US RN Vacancy Rates: *Between 7.5% to 9.9%*	16%	16%	27%	28%
US RN Vacancy Rates: *Greater than 10%*	24%	33%	23%	25%
Maryland RN Vacancy Rates	**8%**	**7%**	**9%**	**8%**

Source: U.S. Source: NSU Nursing Solutions Survey of 42 States (including MD), 2019 National Healthcare Retention and RN Staffing Report, MD Source: HSCRC NSP I Annual Report Data

In the U.S. Bureau of Labor Statistics (BLS) Employment Projections (2016-2026), RNs are listed among the top occupations for job growth through 2026, with an expected 15 percent increase. In addition, BLS expects the workforce to need over 200,000 new RNs each year to fill newly created positions and replace retiring nurses. The last five years of the NSP II funding has positioned the state well to move with the changes in the profession and maintain the pipeline for new entry-level nurses, as well as, the faculty required to prepare the next generation of nurses.

Use of Agency Nurses

Another indicator that vacancy rates in Maryland are on the rise is the data on agency nurse usage. A recent interview with a Chief Nurse Officer at a Maryland hospital revealed they used a centralized nurse staffing agency for the hospital system that brokers for approximately 100 additional agencies. There are different rates for per diem, local, travel, incentive, and critical needs, which escalate costs respectively. The hourly rate can range from $69 to almost $100. (VP/CNO communication, 8/29/19). To compensate for nurse vacancies, hospitals turned to costly strategies such as overtime, agency staff, and travel nurses. These strategies also had the

potential to negatively affect quality, safety, patient experience, and both physician and hospital employee job satisfaction.

When comparing the cost difference between employed RNs versus travel RNs, the amount is staggering. For every 20 travel RNs eliminated, a hospital can save on average, $1.4 million. For 46 hospitals, the annual cost for agency nurse usage statewide is between $129 and $138 million (Figure 12). Continuing the NSP II investment to prepare more nurses should help maintain a stable workforce and assist hospitals in controlling costs while ensuring quality care.

Figure 12: Maryland Hospital's Agency Nurse Cost, FY 2015 – FY 2018

	FY 2015	FY 2016	FY 2017	FY 2018
Agency RN Costs	$129,011,910	$105,825,500	$137,716,996	$129,988,888
Total Number of Hospitals Reporting	47	46	45	46
Average Cost per Hospital	$2,744,934	$2,300,554	$3,060,378	$2,825,845

Source: HSCRC, NSP I Maryland Hospital Annual Survey

Staff Recommendations for the NSP II Program Going Forward

Considering the variability in nursing workforce projections and the shifts in entry-to-practice programs (from Associate Degree to BSN, Second Degree BSN, and Master's Entry in Nursing), leading researchers recommend the importance of monitoring the actual number of newly licensed nurses who are entering practice each year. As reported previously in this report, applicants are being denied entry to pre-licensure programs, citing insufficient numbers of faculty, clinical sites, classroom space, and clinical preceptors. Schools are hindered by difficulties recruiting experienced faculty. The NSP II program is an important component of the recruitment and retention efforts in Maryland. The nursing pipeline is needed more than ever to more Maryland into the future of healthcare.

The following is the staff recommendations for continuing the NSP II program and implementing improvements to the program.

Recommendation 1: Renew NSP II funding for Five Years, FY 2021 through FY 2025

The NSP I was renewed in 2017 to support ongoing education for staff nurses and nurse residencies across all hospitals with the goal of increasing nursing quality placing further pressure on nursing education programs. The program has succeeded in meeting this goal; however there are areas that can be improved to expand the pipeline further. Therefore, MHEC and HSCRC jointly recommend the renewal of the NSP II funding, up to 0.1% of hospital regulated gross patient revenue for the next five years, FY 2021 through FY 2025, with the following additional recommendations.

Recommendation 2: Establish a Workgroup to Recommend Updates to Statewide Initiatives

MHEC will establish a workgroup to recommend revisions to all faculty-focused programs, which are part of the Statewide Initiatives. The workgroup will review the eligibility

requirements for the GNF to align with the needs of nursing programs. As part of the evaluation, the Maryland Council of Deans and Directors recommended focusing on existing faculty retention measures through new or existing programs, increasing the limits on the NNFF and NEDG programs, as well as, addressing the barriers to course release time and eligible expenditures. In addition, they recommend developing a faculty mentoring program to support the GNF and full-time faculty across all 28 nursing programs to improve faculty retention in education settings.

Recommendation 3: Continue Established Competitive Institutional Grants Initiatives

Leaders for the Maryland Council of Deans and Directors, Maryland Nurses Association, Maryland Action Coalition, Maryland Organization of Nurse Leaders and Maryland Nurse Residency Consortium reviewed and approved the continuation of the following initiatives developed in 2015 by the NSP II Competitive Institutional Grants Workgroup:

- Focus on goals to increase the numbers of pre-licensure nurses,
- Increase the proportion of BSN prepared to 80 percent,
- Double the number of faculty with doctoral degrees,
- Strengthen the data infrastructure for the nursing workforce,
- Ensure lifelong learning,
- Double the number of faculty with certified nurse educator credentials
- Provide resources across state nursing programs to support leadership, clinical simulation, inter-professional education, recruitment and retention of new faculty,
- Preparation of clinical instructors
- Faculty mentoring, and
- Opening more individual nurse-level opportunities to recruit more clinical hospital partners.

The Statewide Academic-Hospital Practice Committee agreed with the approved initiatives and submitted additional priorities for clinical models, preceptors and sites.

Recommendation 4: Form NSP I and NSP II Advisory Board to Address Common Issues Between Academia and Practice

There is broad consensus that nurse leaders at the hospitals and academic nursing programs will need to work closely together on solutions to the shortage of clinical practice sites and restricted access on what nursing students are allowed to practice in the clinical settings (due to size and acuity of the units, patient safety, and hospital requirements). Staff recommend researching the impact of out of state nursing programs on clinical sites to develop a joint statewide agreement between hospitals and nursing programs. Educators will need to create additional clinical opportunities to practice other skills such as, documentation in electronic health records, medication administration, Pyxis access, and other procedures that are no longer

26

part of the hospital experience for nursing students. In order to streamline the onboarding of students across all hospitals (reducing time and cost to all stakeholders), staff recommend developing universal requirements that can be implemented across all facilities. Staff shall convene a small NSP I and NSP II advisory board to engage leaders, determine strategies, and focus on mutual goals of both programs for possible solutions.

Recommendation 5: Improve Infrastructure for Nursing Workforce Data

Maryland continues to struggle with access to State-level nursing workforce data. Due to insufficient analytic capacity, the Maryland Board of Nursing (MBON) is unable to efficiently provide comprehensive and timely results response to public information act (PIA) requests. Collaboration with the Maryland Board of Nursing, Maryland Nursing Workforce Center, Maryland Nurses Association, Maryland Hospital Association, Maryland Longitudinal Data System, MHEC, and HSCRC to streamline data sharing between state agencies is recommended. Legislation may be considered to ensure that the data required for monitoring the nursing workforce supply and demand is validated, readily accessible, and publicly available. The HSCRC and MHEC staff recommend that NSP II support the MBON in procuring the necessary data processing systems and work with the agencies and organizations listed above to improve the workforce data infrastructure to better inform future recommendations.

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