Nurse Support Program I (NSP I)
Outcomes Evaluation FY 2013 – FY 2016 and Draft Recommendations for Future Funding

July 12, 2017

Health Services Cost Review Commission

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This is a final recommendation for Commission consideration at the July 12, 2017, Public Commission meeting..

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LIST OF ABBREVIATIONS

AD	Associates Degree in Nursing
BSN	Baccalaureate Degree in Nursing
EBP	Evidence-Based Practice
FTE	Fulltime Equivalent Employee
FY	Fiscal Year
GBR	Global Budget Revenue
HSCRC	Health Services Cost Review Commission
HRSA	Health Resources and Services Administration
IOM	Institute of Medicine
LPN	Licensed Practical Nurse
MS/MSN	Master's Degree/Master's in Nursing Degree
NESP	Nurse Education Support Program
NRP	Nurse Residency Program
NSP I	Nurse Support Program I
QI	Quality Improvement
RN	Registered Nurse

EXECUTIVE SUMMARY

Nurse Support Program I (NSP I) Outcomes Evaluation FY 2013 to FY 2016 and Recommendations for Future Funding

Transforming nursing, the single largest sector of the health care professions (more than 3 million registered nurses nationally and 70,000 in the state of Maryland[1]), will dramatically impact the health care system in Maryland and nationally. Early on, the Maryland Health Services Cost Review Commission (HSCRC) recognized the importance of nursing to the health of the State. To that end, the HSCRC implemented 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. Since program implementation, approximately $131 million (fiscal year [FY] 2001 through FY 2016) has been funded in rates to support the NSP I.

In 2012, the NSP I program aims were aligned with the Institute of Medicine's (IOM's)[2] recommendations in its Future of Nursing report and included the following:

1. *Education and career advancement*. This area includes initiatives that increase the number of advance degree nurses preparing them as future leaders; recruitment and retention of newly licensed nurses through nursing residency programs; and supporting nursing students and experienced RNs re-entering the workforce after an extended leave.
2. *Patient quality and satisfaction*. This area includes lifelong learning initiatives such as certification and continuing education which are linked to improved nursing competency and better patient outcomes.
3. *Advancing the practice of nursing*. This area includes activities that advance the practice of nursing, such as nurse-driven evidenced-based research; innovative organizational structures for clinical nurses to have a voice in determining nursing practice, standards, and quality of care; and American Nurses Credentialing Center's Magnet® and Pathway to Excellence programs demonstrating nursing excellence.

With these recommendations, came the development of nursing and organizational metrics to assess hospitals progress in achieving these program aims. This report contains analysis of outcome data for FYs 2013 to 2016 using the revised organizational metrics and a new secure, web-based data collection tool. Program achievements and areas for continued monitoring and improvement are highlighted below.

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[1] The Henry J. Kaiser Family Foundation. *Total Number Of Professionally Active Nurse.* Published April 2017. http://kff.org/other/state-indicator/total-registered-nurses/?currentTimeframe Accessed May 7, 2017.

[2] IOM (Institute of Medicine). *The Future Of Nursing: Leading Change, Advancing Health.* Washington, DC: The National Academies Press; 2010.

NSP I Achievements in FYS 2013 to 2016

- More than 5,800 newly licensed RNs participated in nurse residency programs supported by NSP I. Voluntary turnover rates were reduced upwards of 10 percentage points, resulting in cost savings of $17.6 million.
- Reduced turnover rates by 12 percentage points among RNs participating in orientation programs for hard-to-fill positions such as the emergency department.
- More than 500 RNs graduated with advanced nursing degrees, increasing the pool of BSN, masters and doctoral prepared RNs.
- Financial support for nursing students increased by almost fourfold. Almost 300 new RNs were added to the workforce and student nurse attrition was reduced by six (6) percentage points over the four years.
- Increased professional and technical certification by more than eight (8) to upwards of 19 percentage points over the four years. Additionally, almost 4,000 RNs obtained initial technical or recertification in FYs 2015 & 2016.
- Nine hospitals attained or maintained Magnet® or Pathway to Excellence designation. Another 17 hospitals reported pursuing nursing excellence designation.
- Reduced vacancy rates by four (4) percentage points over the four years.
- Increased new hire RN retention rates by 10 percentage points from 76 percent in FYs 2013 & 2014 to more than 86 percent in FYs 2015 & 2016.
- Cost savings of more than $23 million in agency RN usage, reduced full-time equivalents (FTEs) from 1,004 to 854 RN agency between FY 2015 and 2016.

Areas for Continued Monitoring and Improvement

- Improve hospital reporting of individual NSP I program expenditures, and increase reliability and accuracy of hospital outcome data.
- Monitor orientation programs turnover data of newly licensed and experienced registered nurses working in areas of critical need (such as emergency departments, critical care, women and infants, and perioperative care).
- Determine the demand in Maryland for nursing transition (refresher) programs that enables registered nurses to re-enter the profession.
- Monitor trends in nurse recruitment and retention rates, as well as, agency nurse usage.

Future Recommendations

- Align NSP with future hospital-based RN workforce requirements by broadening the NSP goal from recruiting and retaining hospital bedside RNs to recruiting and retaining hospital-based RNs.
- Redefine categories eligible for funding, such as transition into practice for new licensed RNs and into specialty practice for experienced RNs, nursing student programs, and the addition of a new program aim focused on developing nursing leaders.
- Explicitly define categories of initiatives that are not eligible for funding.
- Establish NSP I Advisory Board to make recommendations, monitor hospital programs, and their associated outcomes.
- Revise budget forms to align with the outcomes data collection tool.
- Develop and implement a data reporting and analytic system that will allow quarterly or semi-annual submission of data to improve accuracy and ease of analysis.

EXECUTIVE BRIEF

Nurse Support Program I (NSP I) Outcomes Evaluation FY 2013 to FY 2016 and Recommendations for Future Funding

Introduction

This report summarizes the Nurse Support Program I (NSP I) hospital activities and outcomes for fiscal years (FYs) 2013 to 2016 and presents recommendations for the next phase of the NSP I for FYs 2018 through 2022.

Background

The Maryland Health Services Cost Review Commission (HSCRC) instituted a nursing education support program in response to forecasts of significant short and long-term shortages of registered nurses (RNs) in the state of Maryland and nationally. To abate these severe and cyclical nursing shortages in 1986, the HSCRC implemented the Nurse Education Support Program (NESP), which focused on supporting college and hospital-based training of RNs and licensed practical nurses (LPNs).

After consecutive years of economic growth in the national economy in the late 1990s and early 2000s, new forecasts of nursing shortages again spurred the HSCRC into action, and NSP I was implemented. The intent of this five-year, non-competitive grant program was to increase the number of bedside hospital nurses through retention and recruitment activities. Annually, hospitals have been eligible to receive the lesser of their budget request or up to 0.1 percent of the hospital's gross patient revenue. The grant funds were provided through hospital rate adjustments and were used for approved projects that meet the goals of the NSP I. Since its inception in 2001, hospitals have taken significant action to successfully grow and sustain the state's hospital RN workforce.

To that end, NSP I has been renewed twice since 2001, at approximately five-year intervals, to ensure the continuation of hospital initiatives to grow the nursing workforce and advance the profession. As the NSP I approached its second renewal in 2013, HSCRC staff conducted an in-depth program evaluation with its stakeholders. Findings demonstrated that the Maryland hospital RN workforce grew significantly between FY 2007 and 2011, between 15 percent to more than 25 percent (as reported by 11 hospitals). Although difficult to measure the direct impact of NSP I funds, nurse leaders attributed much of the growth and retention of bedside hospital RNs to the NSP I.

As the economy improved following the economic downturn in 2008, impending shortages were projected despite the increases in supply that strengthened and stabilized the RN workforce. The growing number of health care consumers—many with chronic diseases—coupled with the aging of the population, has contributed to an ever-increasing demand for health care services. The Health Resources and Services Administration (HRSA) predicted that Maryland would be one of 16 states to experience a nursing shortage, while the nation as a whole would have a mild

surplus[3]. Based on the successes the program achieved in increasing the nurse workforce, coupled with the impending trends, the HSCRC supported the renewal of the NSP I for an additional five years from FY 2013 to FY 2018. Similar to its previous renewal, significant changes were made to the program based on an environmental scan of the healthcare landscape.

Unprecedented changes like the Affordable Care Act, the Quadruple Aim[4], and the Institute of Medicine's (IOM's) Future of Nursing Report[5] reshaped the health care landscape. With the changes in payment models, health care access, along with emphasis on better quality, safety, and patient experience came the recognition that the role of professional nurses also must change.

Accordingly, the NSP I aims were aligned with the IOM Future of Nursing report, which included recommendations to better prepare the future hospital RN workforce in Maryland. Below are the recommended NSP I categories and hospital initiatives to achieve the eight (8) IOM key recommendations for transforming the nursing workforce.

Education and career advancement. This area includes initiatives that support newly licensed or experienced RNs as they transition into practice or to new practice environments (i.e., nursing residency programs) and increase the number of new and advanced degree nurses (tuition assistance). Examples of initiatives include:

- Nurse residency program
- Orientation for critical need areas (i.e., emergency department)
- Transitional (nurse refresher) program
- RN tuition assistance
- Nursing student tuition assistance

Patient quality and satisfaction. This area includes efforts that can demonstrate the link between improved nursing competency and better patient outcomes (certification). It also includes activities that develop nurses as lifelong learners and prepares them as leaders (continuing education). Examples include:

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[3] U.S. Department of Health and Human Services. Health Resources and Services Administration. *National Center for Health Workforce Analysis. The Future of the Nursing Workforce National- and State-Level Projections, 2012-2025* Rockville, Maryland, 2014.
http://bhw.hrsa.gov/healthworkforce/supplydemand/nursing/workforceprojections/nursingprojections.pdf May 26, 2017

[4] The Quadruple Aim includes the original Triple Aim components (enhancing patient experience, improving population health and reducing costs) and adding the goal of improving the work life of health providers, including clinicians and staff.
Bodenheimer, T. & Sinsky, C. From Triple To Quadruple Aim: Care Of The Patient Requires Care Of The Provider. *Annals of Family Medicine*. 2014; 12(6): 573-576.

[5] IOM (Institute of Medicine). *The Future Of Nursing: Leading Change, Advancing Health*. Washington, DC: The National Academies Press; 2010.

- RN professional certification
- RN technical certification
- RN continuing education

Advancing the practice of nursing. This area includes activities that advance the practice of nursing; provide clinical nurses with a voice in determining nursing practice, standards, and quality of care; and participation in national programs demonstrating nursing excellence. Examples of these activities include:

- Nursing excellence (Magnet® or Pathway to Excellence® designation)
- Shared governance model
- Evidence-based practice, quality improvement, and/or research projects

The HSCRC, with stakeholder input, developed nursing and organizational metrics to assess hospitals' progress in achieving the program aims. This report shares the most recent outcome data collected from hospitals participating in the NSP I from FY 2013 through FY 2016. This report discusses the continued growth of nurses as health care professionals and their impact on the health care delivery system in Maryland, as well as areas of continued improvement needed in optimizing the use of NSP I funds.

Data Collection Process

In 2013, nurse and hospital leaders with HSCRC staff revised the annual report to include standardized outcome metrics that addressed the varied programs for each of the three newly proposed program aims. For consistency, outcome metrics were operationalized using nationally accepted definitions. Unlike previous reports, the newly revised report also contained a financial section requesting hospitals to report actual expenditures (administrative and project costs) for each of the programs supported by the NSP I. A secure, web-based data collection tool was used for ease of data entry and accuracy.

The revised annual report consists of three sections: an end-of-year financial report, hospital program outcome metrics, and overall hospital metrics, such as vacancy and turnover data. In Section I, NSP I coordinators report their hospital's actual expenditures, including administrative and project costs. Additionally, respondents report individual program expenditures for each of the program supported by the NSP I. In Section II, hospitals report outcome metrics for each program. For example, if the hospital invests NSP I funds in a nurse residency program, professional RN certification, tuition assistance, and Magnet® activities, the hospital must report outcome metrics associated with each of those programs. Section III collects standardized metrics about RN recruitment, retention, and vacancy rates, as well as hospital use of agency RNs. HSCRC require hospitals to complete the online annual report and submit actual expenditures for each fiscal year.

In 2015, the data collection tool was revised due to numerous reporting errors in the two previous fiscal years. Changes included streamlining questions, clarifying written instructions,

and providing an operational definition reference guide. Further, an educational webinar for NSP coordinators was provided to improve data entry and reporting accuracy.

Hospital Reporting

In 2013, 47 of the 50 (94 percent),eligible Maryland hospitals submitted the required data collection tool and end-of-year expense report Many of the submitted reports contained large amounts of missing data. Of the 47 hospitals that submitted reports, only 45 were included in the final analysis due to incomplete data entry. In 2014, 46 hospitals (96 percent) out of the 50 eligible hospitals submitted reports. Again, one survey was excluded from the final analysis due to incomplete data entry. For FYs 2015 and 2016 all of the eligible hospitals (48 due to hospital mergers) submitted completed reports.

Programs Supported Through the NSP I

More than $67 million of NSP I funds were invested in RNs at participating hospitals between FYs 2013 and 2016. A comparison of actual project, administrative, and total expenditures for the four years revealed that administrative expenses increased from 50 percent of total expenses in FYs 2013 and 2014 to 57 percent in FYs 2015 and 2016. During the four years, hospitals most frequently spent funds on programs supporting Education and Career Advancement (Figure 1). An analysis of spending by individual programs found more than 40 percent of NSP I funds were invested in nurse residency and orientation programs (Figure 2). With the advent of the Global Budget Revenue (GBR) payment methodology, funding by hospitals for quality improvement, evidence-based practice, and research programs substantially increased from four (4) percent of total expended dollars in the previous years to more than 13 percent in FYs 2015 and 2016. Correspondingly, the amounts allocated to nursing excellence programs decreased. Although the percentage of total funds for tuition assistance declined in the last two years, amount of tuition assistance supporting nursing students doubled from less than $500,000 in FY 2015 to almost one million in FY 2016. The increased interest by hospitals for nursing students may suggest concerns about older RNs leaving the workforce and potential of RN nursing workforce shortage in Maryland.

When comparing reported program expenditures (i.e., the sum of individual program expenses) with the reported total expenditures in FYs 2013 and 2014, staff found an unexplained variance of 30 percent. NSP I coordinators attributed the variance to misunderstanding the question, lack of knowledge of NSP I expenditures, inadquate assistance from financial officers, and not reporting funds for programs that appeared not to fit into one of the listed categories.

To improve reporting of program expenses in FY 2015, an explaination of funding for the "Other" category was required. Additionally, extensive education was provided to NSP I coordinators to improve the reporting of end-of-the-year expenses. Although expense reporting substantially improved and no unexplained variances were found, the amount of expenses reported in the "Other" category was still concerning. More than 20 hospitals cited the use of funds for programs outside the recommended categories, accounting for more than 13 percent of NSP I expenditures.

Figure 1: Percent of NSP I Funds Invested in Future of Nursing Program Aims, FYs 2013 - 2016

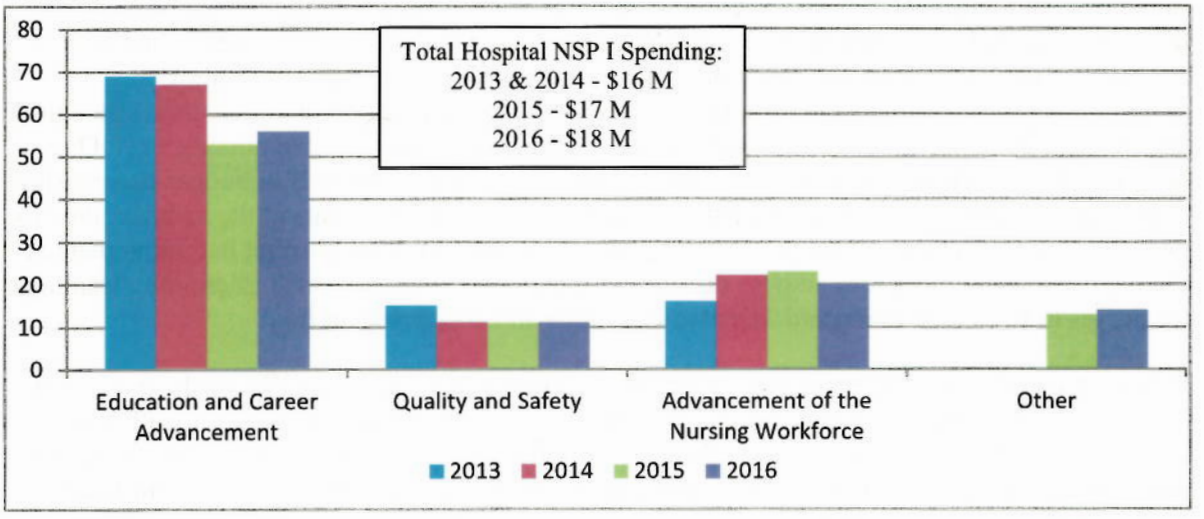
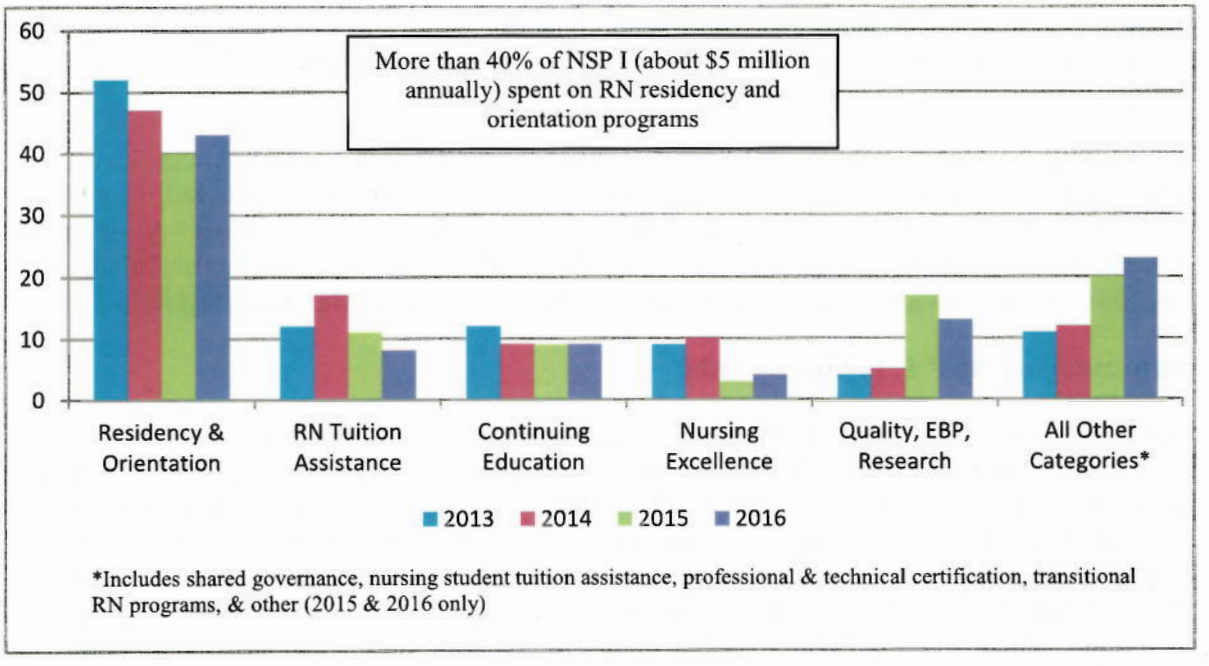


Figure 2: NSP I Top Funding Categories, FYs 2013 - 2016



Impact of the GBR on Hospital Nursing Workforce

In the FY 2015 and 2016 reports, NSP I Coordinators were asked about the impact of the GBR that was instituted with most Maryland hospitals by June 2014 and the responses varied widely. Several hospitals indicated that the impact had been positive, for instance, providing opportunities for investments in training for nurses in care management and transition strategies; and incorporating patient educators and quality advisors as resources to the nursing staff. One hospital has used the shared governance model to engage the nursing staff in budget stewardship, utilization of supplies, and development of creative quality improvements at the bedside; thereby decreasing costs and improving population health demands. Another hospital had implemented innovative staffing models to address declines in inpatient admissions, such as crossing training for nurses in ICU, step-down and Telemedicine units and staggering shifts.

However, not all the feedback was positive. Many coordinators sited the GBR as the reason for turnover among experienced nurses due to stagnant wages that are not competitive with non-hospital facilities and the increased workload of monitoring quality measures. The increase in the acuity of the patients, coupled with the shrinking inpatient nursing staff, has put a significant burden on the remaining nurses, decreasing overall job satisfaction. Several responses indicated challenges in recruitment and retention of nursing staff. There is an increased focus on efficient spending, and nursing leaders have to be fiscally responsible with resources, at the expense of investing in their nursing workforce. Several coordinators reported declines in opportunities for nurses to engage in non-patient care activities such as research, safety and evidence-based practice (EBP) because of budgetary constraints.

These responses highlight the need for continued funding of the NSP I, which provides an additional resource for investing in the nurse workforce. One coordinator responded, "If it <wasn't> for the NSP grant, many of our programs would have been discontinued." As described in the following section, NSP I funds has allowed hospitals to invest in residency and other programs that has attracted highly motivated and educated nurses to Maryland hospitals.

Summary of NSP I Achievements

The goal of NSP I is to increase the number of bedside nurses in Maryland through retention and recruitment activities. As described in previous renewal reports, Maryland hospitals continue to meet and exceed the goals of NSP. Hospitals attribute NSP I to its successes in retaining newly licensed RNs, advancing nursing education and certification, improving use of evidence-based practices, attaining recognition for nursing excellence, and improving RN retention. As written by one hospital, "The NSP program allows our hospital to provide the nurse residency program, continuing education for our nurses and assistance in preparing for the pediatric certification exam. Without funding, our small education department would be overwhelmed trying to meet the needs of the nursing department."

Increasing Bedside Nurses through RN Transition into Practice Programs

The concept of nurse residency programs emerged to prevent newly licensed RNs from leaving their employer or the profession entirely. Nurse residency programs improve the organization, management, communication, and clinical skills, as well as retention of newly licensed RNs, and reduce hospital costs associated with attrition[6]. Unlike other professions in medicine, transition programs (referred to as residencies) have not been mandated by the nursing profession to integrate new graduates into the workplace. Maryland is recognized nationally as a leader in the nurse residency program; having one of the only statewide collaborative models with more than 20 participating hospitals and financial support through the NSP I.

Approximately half of the responding hospitals invested NSP I funds into nurse residency programs (NRP) over the four years. Hospitals were able to fund program coordinators and instructors; nurse residents' or other staff salaries that facilitate resident attendance; and program expenses such as educational materials. More than 5,800 newly licensed RNs participated in nurse residency programs supported by NSP I. Voluntary turnover rates were reduced upwards of 10 percentage points in hospitals offering a NRP, compared to hospitals not offering NRPs (Figure 3). Cost savings due to decreased attrition (cost to recruit and retain a replacement RN) is estimated at $88,000 per RN[7]. A 10 percent (200 RNs) reduction in turnover rates equates to an annual statewide cost saving of $17.6 million by hospitals investing in residency programs. This program alone demonstrates the far-reaching impact NSP I has had on bedside hospital nurse retention.

Comparing hospital hiring practices for baccalaureate-prepared (BSN) and associates degree (AD) RNs, hospitals offering one-year nurse residency programs preferred hiring BSN nurses. In fact, BSNs were almost twice as likely to be hired compared to their AD counterparts, whereas, hospitals with no residency program are more likely to hire AD RNs. The hospitals offering no residency program are also more likely to be smaller and more rural.

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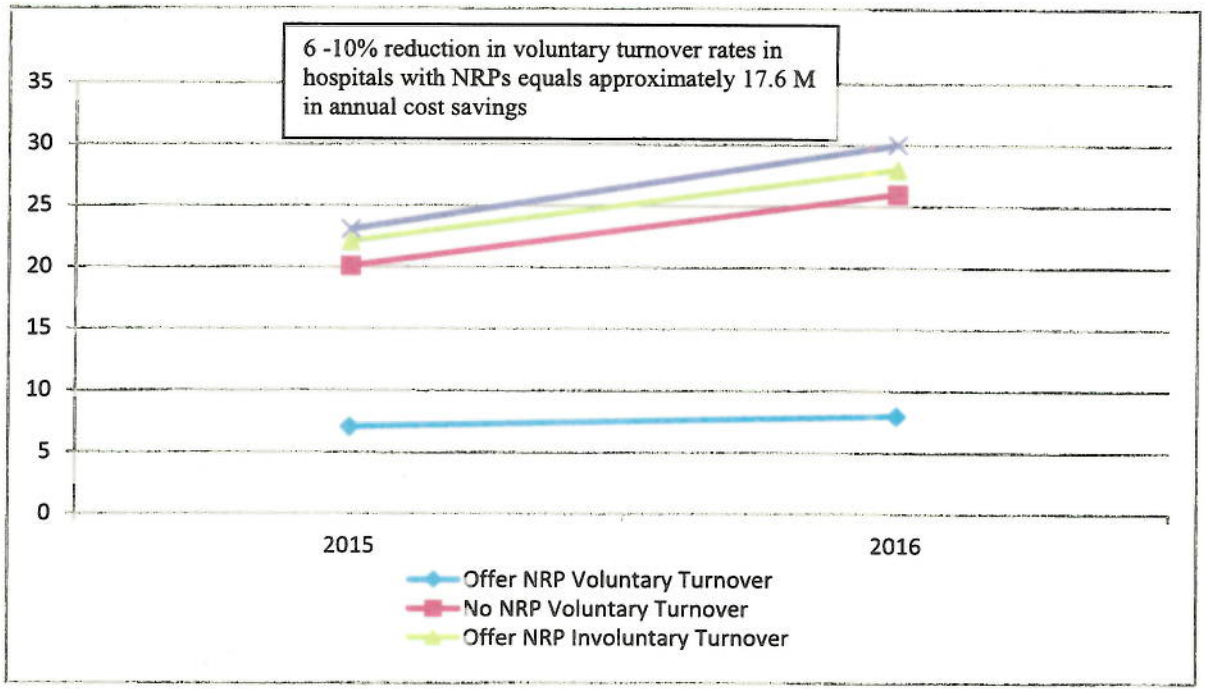
[6] National Academies of Sciences, Engineering and Medicine. *Assessing Progress on the Institute of Medicine Report The Future of Nursing*. Washington, DC: The National Academies Press; 2015. http://www.nationalacademies.org/hmd/Reports/2015/Assessing-Progress-on-the-IOM-Report-The-Future-of-Nursing.aspx. Accessed May 26, 2017.

[7] Jones, C. B. Revisiting Nurse Turnover Costs: Adjusting For Inflation. *JONA*. 2008; 38(1): 11-18.

Figure 3: Comparison of 1-Year Nurse Residency and No Nurse Residency Program Voluntary Turnover Rates, FY 2015 vs 2016



Decreasing Turnover Rates for Hard-to-Fill Critical Need Positions

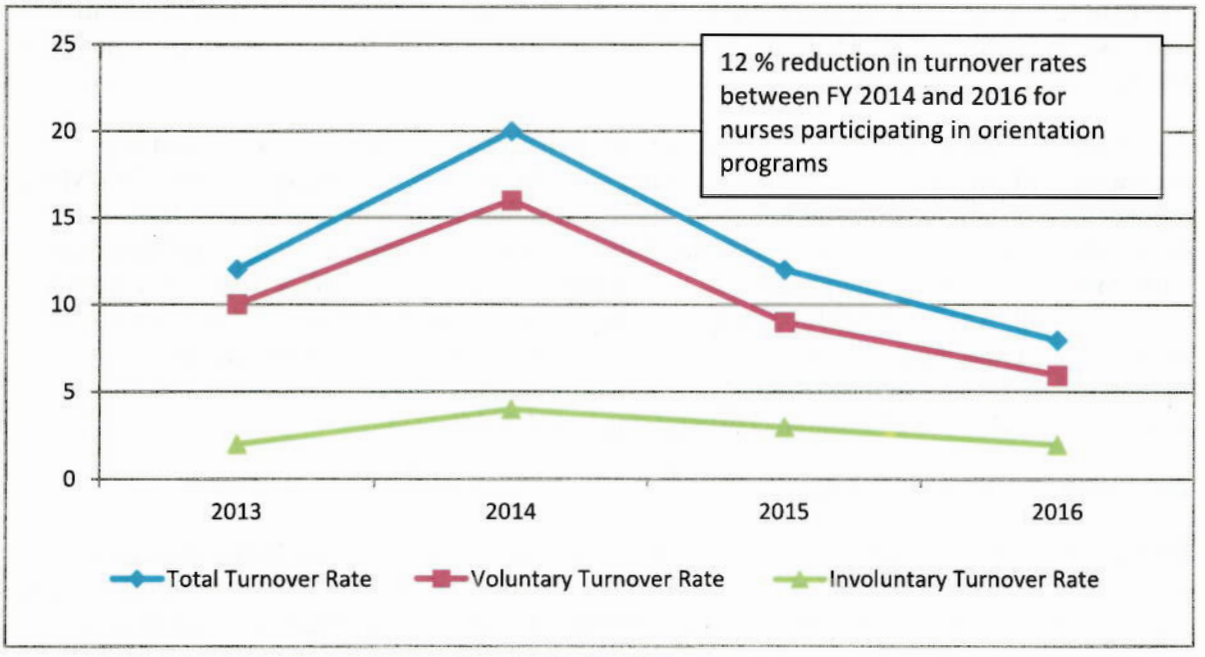
Nationally, nurse leaders are struggling with transitioning newly licensed RNs and experienced RNs to hard-to-fill specialty clinical roles and critical leadership roles. Areas of greatest need for RNs in Maryland are the Emergency Department, adult critical care/intermediate care, perioperative, women and infant health, and medical-surgical specialties. Maryland hospital workforce data, collected from hospital Chief Nursing Officers, also identified nurse manager, director, and nursing professional development practitioner (hospital-based nurse educator) as difficult roles to fill[8]. Furthermore, respondents cited a need for experienced clinical bedside nurses.

Over the four years, about half of the hospitals reported using NSP I funds to support the implementation of orientation programs for hard-to-fill positions. But unlike nurse residency programs, poorly reported outcome metrics associated with the orientation programs make it difficult to examine the impact of these funds. As discussed in the HSCRC NSP I interim

[8] Daw, P. & Warren, J. I. *Transforming the Future Nursing Workforce: Innovative Statewide Opportunities*. Podium presentation at the Maryland Nurses Association 113th Annual Convention "Every Nurse A Leader" Conference Center At The Maritime Institute Linthicum Heights, MD October 13-14, 2016

outcome evaluation report[9] that was presented to the Commission in February, a 25 percentage points increase in turnover rates were reported for nurses participating in orientation programs between FYs 2013 and 2014. Further analysis and discussions with NSP I coordinators indicate the turnover data may have been overstated. For the final analysis, inaccurate data were removed and the turnover rates declined from a high of 20 percent in 2014 to 8 percent in 2016 (Figure 4). Despite the issues with the data, this downward trend suggests orientation programs are positively impacting hard-to-fill RN turnover rates.

Figure 4: Orientation Program Turnover Rates



Preparing a Highly Educated RN Workforce

Demands for new and expanded RN roles to provide care across the health care continuum, as well as, shortages of RNs as primary care providers, faculty, and researchers has made it imperative for RNs to achieve higher levels of education. Strong research evidence has linked lower mortality rates, fewer medication errors, and positive outcomes to nurses prepared at the baccalaureate and graduate degree levels[10]. Quality patient care hinges on a well-educated,

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[9] Health Services Cost Review Commission. *Nurse Support Program I Outcomes Evaluation FY 2013-2014 and Recommendations for the Future, February 8 2017*; http://www.Hscrc.State.Md.Us/Documents/Commission-Meeting/2017/02/HSCRC-Public-CM-Pre-Meeting-Packet-2017-02-02.Pdf. 2017. Web. Apr. 30 2017.
[10] American Association of Colleges of Nurses. *Creating a More Highly Qualified Nursing Workforce.* http://www.aacn.nche.edu/media-relations/fact-sheets/nursing-workforce. 26 May 2017.

highly functioning, motivated nursing workforce. The IOM Future of Nursing report called for 80 percent of RNs to hold a BSN degree by 2020 and a doubling of doctoral-prepared RNs.[11]

Through NSP I, the pool of BSN, master's degree and doctoral RNs in Maryland hospitals has substantially increased over the past 10 years of reporting. Between FYs 2007 and 2012, about 25 hospitals invested $8.5 million in tuition assistance supporting approximately 800 RNs. Similarly, between FY 2013 and 2016 18 to 22 hospitals invested more than $6.7 million in tuition assistance, allowing 2,300 RNs to obtain financial assistance towards advanced nursing degrees. Of those nurses receiving assistance in the last four years, approximately 522 graduated from nursing programs (74 percent with BSNs and 22 percent with MS/MSNs). Additionally, two RNs graduated with doctoral degrees in nursing. Furthermore, the student attrition rate held steady between 2 and 4 percent during this period.

These successes may be partially attributed to the synergistic effects of the NSP I and II programs. NSP II grants have funded programs for RNs to easily transition into BSN, MS/MSN, and doctoral programs. For example, NSP II programs that are helping to facilitate this movement are the newly-funded Associate-to-Bachelor's nursing programs that facilitate duel enrollment in an AD nursing program at a community college and the BSN degree at a partner nursing school. Another NSP II program uses shared resources among hospital and schools of nursing to increase the pool of nurse clinical instructors, while advancing the numbers of masters-prepared RNs in the hospitals. The program, initially funded in FY 2006, has grown from the 2 hospitals to 18 hospitals participating in FY 2016.

Increasing the Nursing Pipeline

Between FYs 2013 and 2016, financial support for nursing students by hospitals increased almost fourfold and added 282 new RNs to the workforce. Anecdotally, hospitals reported using NSP I funds beyond the traditional tuition assistance. Hospitals paid wages for student time while attending classes, stipends for incidentals such as textbooks and fees, and supported hospital-based externship and internship programs. More than half (282) of the approximately 524 nursing students funded through NSP I graduated from their basic licensure programs. Of those graduating, approximately 59 completed associate degree programs, 185 completed baccalaureate degree programs and 36 completed generic master's degree programs[12] Student attrition rates fell by 6 percentage points, from 7 percent to less than 1 percent over the four years. Hiring practices remained constant or slightly increased suggesting hospitals are hiring more new graduates to fill positions being vacated by older counterparts as they start to exit the workforce with the improving economy.

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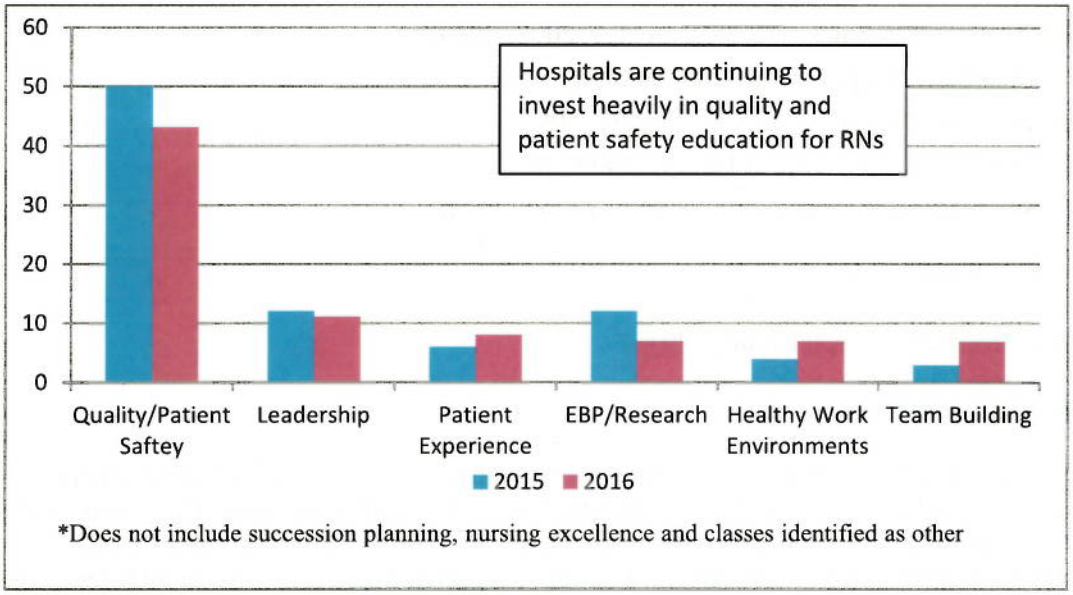
[11] IOM (Institute of Medicine). *Future Directions of Credentialing Research in Nursing: Workshop Summary*. Washington, DC: The National Academies Press, 2015.

[12] Data by degree type was not reported for all new nursing graduates by hospitals

Advancing Lifelong Learning through RN Certification and Continuing Education

As described in the previous 5-year renewal report, Maryland hospitals continue to encourage RNs to obtain specialty and technical certification and participate in continuing education classes. Certified nurses can positively impact their workplace, peers, and patients[13]. Hospitals employing certified wound care nurses were found to have better RN pressure ulcer assessment and prevention practices and lower rates of pressure ulcers[14]. Approximately 2,800 RNs completed certifications between FYs 2007 and 2012. Hospitals reported increases upwards of 19 percentage points for the most recent four years. In addition, almost 4,000 RNs obtained initial technical or recertification in FY 2015 & 2016. RNs obtained certification in multiple specialty nursing areas; ranging from medical-surgical to women's health, wound care, and nurse executive certifications.

Figure 5: NSP I Top Internal & External Continuing Education Categories



Provision of ongoing continuing education is another method to foster lifelong learning. Almost half of the hospitals over the course of the four years reported the use of NSP I to support continuing education programs for RNs. More than 9,000 RNs attended educational programs focused on topics associated with goals of the quadruple aim (better quality, better health, lower

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[13] IOM (Institute of Medicine). *Future Directions Of Credentialing Research In Nursing: Workshop Summary*. Washington, DC: The National Academies Press, 2015.

[14] Boyle, D. K., Bergquist-Beringer, S. & Cramer, E. Relationship of Wound, Ostomy, and Continence Certified Nurses and Healthcare-Acquired Conditions in Acute Care Hospitals. *J Wound Ostomy Continence Nurs.* 2017; 44(3):283-292. DOI: 10.1097/WON.0000000000000327

cost, and healthier workforce). Quality and patient safety classes comprised more than 50 percent of the educational offerings (Figure 5).

Advancing the Practice of Nursing

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, six were re-designated as Magnet® hospitals in FY 2013 and 2014 and one in 2016. Seventeen hospitals are pursuing either Magnet® or Pathway to Excellence® designation, up from 13 in 2014. Magnet designated hospitals with the initial and re-designation dates are listed below.

- Anne Arundel Medical Center (2014)
- Mercy Medical Center (2011, 2016)
- Sinai Hospital of Baltimore (2008; 2013)
- MedStar Franklin Square Medical Center (2008; 2013)
- Johns Hopkins Hospital (2003; 2008; 2013)
- University of Maryland Medical Center (2009; 2014)
- UM Shore Medical Center at Easton (2009; 2014)
- UM Shore Medical Center at Dorchester (2009; 2014)

Pathway to Excellence

- Union Hospital of Cecil County (2016)

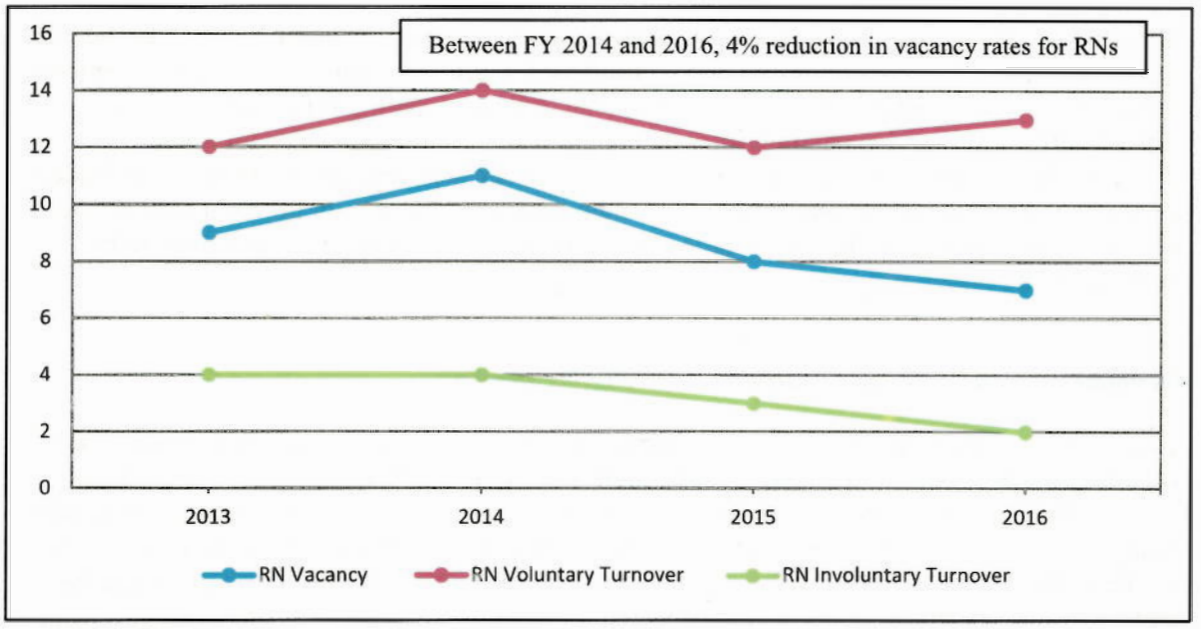
Advancing Nursing Science

The NSP I supports research studies, evidence-based practice (EBP), or quality improvement (QI) projects to build the science of nursing and improve patient care outcomes. The numbers of hospitals involved in QI, EBP, or research studies grew from five in 2013 to 12 in 2016 and expended funds increased almost seven-fold. Funding supported nurse residents and RN teams in conducting QI/EBP projects, such as early mobilization programs, pressure ulcer reduction, and early warning systems for sepsis. A project conducted by one hospital to improve identification of multiple birth babies was implemented throughout its healthcare system as a best practice.

Improving Hospital Vacancy & Turnover Rates While Reducing RN Agency Costs

Vacancy rates decreased by four percentage points and new hire RN retention rates increased by 10 percentage points between FYs 2013 and 2016 (Figure 6). Correspondingly, hospital use of agency RNs declined by 150 FTEs (FYs 2015 to 2016) equating to a cost savings of more than $23 million.

Figure 6: Hospital Vacancy & Turnover FY 2013-2016



Recommendations for the NSP I for FY 2018 - 2022

The future growth of the national nursing workforce (RNs per capita) is projected to vary significantly; ranging from zero growth in New England to 40 percent growth in the West, South, and Central Regions. Growth forecasts for the Mid-Atlantic Region suggest less than 10 percent growth in RN FTEs and only eight (8) percent growth in RN FTEs per capita. Unlike other fast growing regions in the nation with a projected surplus of nurses, Maryland is projected to be one of the slowest growth regions and projected to have workforce shortfall by 2030[15]. A 5-year continuation of NSP I is recommended to prevent the projected workforce shortage of nurses. The HSCRC's investment in nursing practice and education is as timely and relevant today as it was decades ago. Transforming nursing in Maryland will, by virtue of the sheer numbers in hospitals, have far-reaching statewide effects on the quality and safety of the state's hospitals.

To ensure continuous program improvement, the following programmatic changes are recommended.

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[15] Aurbach, D. I., Buerhaus, P. I., & Staiger, D. O. How Fast will the Registered Nurse Workforce Grow Through 2030? Projections in Nine Regions of the Country. *Nursing Outlook,* 2017, 65 (1), 116-122. DOI: http://dx.doi.org/10.1016/j.outlook.2016.07.004

Recommendation 1: Broaden the NSP goal to include all hospital-based RNs.

As health care transitions from a focus on episodic, acute care to population health, new health care models and delivery systems are being introduced to provide high-quality, patient-centered care across the care continuum. Global and national trends are calling for nurse leaders to prepare staff for new and expanding roles that come with new competencies for nurses. Initiatives that expand and encourage partnerships between academic and hospital nurse leaders to prepare nurses for present and future roles and produce the nurse with the right skill sets to meet new care delivery models/workforce requirements in Maryland should continue to be promulgated by NSP I and II.

Recommendation 2: Redefine categories for eligible funding.

A well-educated nursing workforce is fundamental to transforming the nursing profession and will address the increasing demand for safe, high-quality, and effective health care services. Bedside RNs are being asked to rapidly transition from a focus on discharge planning to another setting, to providing continuity of care across the health care continuum. With the new health care demands, nurses will have new innovative roles and acquire new skill sets, including the need for strong leadership skills. Future RNs will need to fill a variety of leadership roles from the bedside to the C-suite. It is recommended that a new leadership category is added to the NSP I initiatives and many of the current programs are redefined to keep up with projected health care trends.

Further, the current quality and retention rates of transition to specialty practice programs, such as to the emergency department, are problematic. Continued investment in practice transition programs and recording of outcome metrics are required to determine their effectiveness in retaining RNs.

Finally, new options for hospital-based nursing student programs, such as externships and internships, need to be made available to increase the nursing pipeline. As the economy improves and older RNs exit the workforce, significant geographical shortages of health care providers and nurses are projected. It is also recommended that innovative academic-practice models that maximize the capacity for the preparation of new RNs continue to be funded through NSP I and NSP II.

Recommendation 3: Establish NSP I Advisory Board.

HSCRC staff have continuously improved processes for NSP I. However, greater ownership and oversight is required by hospital leaders to strengthen and improve NSP I. An Advisory Board, consisting of key stakeholders, is recommended to advise HSCRC staff about programmatic improvements, monitor hospital programs for alignment with the NSP I goal, and evaluate outcome metrics and make recommendations.

Recommendation 4: Establish categories of initiatives not eligible for funding.

From this analysis, it is evident many hospitals are not using NSP I funds as intended. Program guidelines to include a comprehensive list of approved programs are recommended, as well as, mandatory hospital education about the NSP program. A formal review process of hospital program applications by an Advisory Board should lessen this issue.

Recommendation 5: Revise forms to align with the data collection tool.

Hospital respondents expressed confusion about the reporting forms which they believed contributed to problems with reporting data accurately. It is recommended that forms be reviewed and revised as needed, guidelines developed, and education provided to hospitals prior to the next funding cycle.

Recommendation 6: Develop and implement a new data reporting and analytic tool.

This analysis identified the need for hospitals to improve the reporting of organizational metrics. HSCRC staff met with NSP I coordinators to discuss issues with reporting and methods to improve their ability to provide reliable and accurate data. Although staff developed a complete instructional guide, added and revised operational definitions, and offered a live educational webinar (which was recorded for later viewing) to NSP I coordinators, issues persisted. New online systems allowing for real-time data entry are recommended to improve accuracy of data.