Safeguarding the Future of Pediatric Care: Challenges and Opportunities for Educating and Expanding the Pediatric Nursing Workforce

The Institute of Pediatric Nursing's Education Task Force

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March 16, 2021

PEDIATRIC NURSING CERTIFICATION BOARD

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Advancements in medical technology have enabled many children and adolescents with serious disease to survive conditions that were once considered fatal (Foster, et al., 2019). During the past decade, the number of children and adolescents living with considerable medical complexity has grown. Approximately 20% of children under 18 years of age in the United States (U.S.) have a special health care need, and one in every five households includes one or more children with special needs (Health Resources and Services Administration [HRSA], 2016). The care of children, especially those with special needs, has outpaced the growth of the pediatric nursing workforce. Expert pediatric nurses are in short supply, particularly in the community, home health care, and hospital settings that serve as lifelines for children with special needs and their families (Foster, et al., 2019).

It is deeply concerning that in the face of this increased demand for a practice-ready pediatric nursing workforce, current trends in undergraduate nursing education favor an emphasis on adult and geriatric medical-surgical nursing content and clinical experiences. Many undergraduate nursing programs have decreased pediatric content and diminished or completely eliminated face-to-face pediatric clinical experiences. This significantly limits students' exposure to, and knowledge about providing for developmentally appropriate, holistic health care needs of children, adolescents, and their families.

This white paper provides background information related to the unique developmental and health care needs of children. It sheds light on myriad issues that complicate health care for children in today's complex healthcare environment and asserts the need for the establishment of a highly trained

pediatric nurse workforce that is adequately prepared to address the future health care needs of children. This paper highlights current challenges to securing hands-on pediatric clinical experiences for nursing students and presents educational best practices for appropriate use of complementary simulated pediatric clinical experiences. The advantages of face-to-face, real-time clinical experiences with children and adolescents are discussed, and an expanded vision of where health care for children occurs is presented to stimulate creative approaches to enabling pediatric clinical experiences for educators and students alike.

Key Trends that Influence the Delivery of Care to Children and Adolescents

Pediatric nurses require the highest levels of education and clinical preparation to meet the health care needs of an increasingly diverse, complex pediatric population. Today, children and adolescents are more economically, racially, and ethnically diverse than at any other period in our nation's history. In 2017, 18% of children (13.4 million) lived in families with incomes below the U.S. poverty level (Annie E. Casey Foundation, 2019). As the income inequality gap widens, the number of disadvantaged children, whose families reside at lower income levels, continues to increase (Inequality Organization, 2019). Children who live in poverty are at a greater risk for a variety of adverse health outcomes including prematurity, infant mortality, accidental injury, toxic environmental exposures, chronic illness, and learning and attentional disabilities related to toxic stress exposure (Council on Community Pediatrics, 2016). The U.S. continues to experience significant growth in Latino, Asian, and Black populations and is projected to become *minority white* by 2045 (Frey, 2018). Despite the United States' growing diversity, the pediatric nursing workforce lags behind in representation from these minority populations. Increasing the diversity of the pediatric nursing workforce can improve health outcomes of culturally diverse patients.

Beyond the social and economic challenges in providing pediatric health care lies an array of medical issues that require a specialized set of skills. Children present complexity due to their trajectory through predictable, developmental changes that affect biological, anatomical, physiological, psychological, emotional, and social differences in how they experience acute and chronic illnesses or injuries. Pediatric nurses need to be adept at communicating with children who may range on an expressive language continuum from non-verbal to fully developed language skills. They also need to develop skill and finesse in communicating with a wide variety of parents, guardians, and other family members who provide emotional support and day-to-day care for their children.

Throughout the past two decades, much has been written about toxic effects of adverse childhood experiences (ACEs) such as undergoing physical, psychological or sexual abuse; exposure to adults in the household with addictions or mental illness; witnessing violence against one's mother or other family members; or having family members who are incarcerated. Approximately 61% of Americans surveyed have experienced at least one adverse childhood event (Centers for Disease Control [CDC], 2019, Nov 5). One in six Americans has experienced four or more adverse childhood events. According to the CDC (2019, Nov 5), ACEs are associated with adverse health problems across the lifespan and linked to at least five of the top causes of death in the U.S. The prevalence of ACEs in today's pediatric population necessitates the need for a highly educated pediatric nursing workforce to care for the specialized physical, mental, and emotional health needs of the nation's children. As such, undergraduate nursing programs should include curricula about children affected by ACEs. Specifically, classroom content on the provision of trauma-informed care should be paired with clinical practice experiences to complement classroom learning.

Challenges to Securing Pediatric Clinical Experiences for Nursing Students

The U.S. health care system is becoming increasingly complex. Shifts in how care is delivered, changing patient demographics, speed of technological advancements, and economic obstacles are among the challenges facing nursing professionals. The demand for highly skilled, competent nurses will be paramount to ensuring the successful delivery of high quality, safe, and effective patient care. It is estimated that by 2050 there will be nearly 80 million children in the United States (Betz, 2017a). Pediatric nursing education must keep pace with changing demographics to meet the needs of the growing pediatric population, particularly children and adolescents with special health care needs. The challenge lies in the decreased availability of comprehensive pediatric content in nursing curricula. Modifications in pediatric undergraduate curricula should reflect the health issues experienced by children (Betz, 2017a; Budden et al., 2016; Child Stats.gov, 2015; McCarthy & Wyatt, 2014).

A major concern for pediatric educators is the growing difficulty in providing nursing students with meaningful clinical experiences beyond classroom-based learning that will prepare them for professional practice and working with children. Although exposure to hands-on clinical learning is vital to attaining professional competence, challenges exist in recruiting and retaining experienced pediatric faculty. The U.S. is experiencing a growing shortage of doctorally prepared nursing faculty (Smeltzer et al., 2015). Moreover, the number of pediatric nurses has declined from 12.1% of the nursing workforce in 2008 (HRSA, 2010) to 9.4% in 2017 (pediatrics 4.7%, neonatal 2.2%, and school health 2.5% combined) (Smiley et al., 2018). The decline in pediatric nurses has reduced the number of nurses seeking pediatric-focused doctoral education and future careers as pediatric faculty (Harrison, et al., 2020). Equally problematic is the decreased availability of acute care clinical sites (McCarthy & Wyatt, 2014; McNelis et al., 2011). McCarthy and Wyatt (2014) reported a number of barriers, including an increase in competition among nursing programs in the attainment of clinical sites, an inadequate

number of quality pediatric practice sites, and an absence of hands-on pediatric learning opportunities with children. Similarly, Pohl and colleagues (2014) noted consolidation among community-based hospitals and a move toward regional pediatric hospitals as a cause for increased clinical site competition and decreased availability for student placements.

A shifting demographic of children from the acute care to ambulatory setting and an increased focus on wellness and preventive health call for a paradigm shift in pediatric clinical education. Coffey (2013) called for increased use of community-based pediatric settings as a response to the decline in pediatric inpatient census and an increase in ambulatory pediatric services such as outpatient surgery centers and clinic visits over the past decade. Unfortunately, a paucity of evidence exists regarding the use of alternative pediatric clinical sites and successful learning outcomes. Consideration should be given to provide nursing students with clinical experiences at alternative sites of care where children spend the majority of their time such as homes, schools, churches, camps, physician offices, and community centers (Betz, 2017b; Kubin, et al., 2013).

Changing Face of Nursing Education

For over four decades, nursing students have pursued multiple educational pathways to attain an entry level registered nurse (RN) license including: Bachelor of Science in Nursing (BSN), Associate Degree in Nursing (ADN), and the three-year Nursing Diploma Program (National Academy of Medicine, 2010). More recently, an accelerated, baccalaureate degree program for students who already possess a baccalaureate degree in another field has become a popular option, as has the accelerated master's degree entry program that grants students who have a non-nursing baccalaureate degree direct entry into a pre-licensure Master of Science in nursing degree program. The multiplicity of options reflects a growing need to meet the needs of an increasingly diverse pool of

adult learners and provide numerous opportunities for individuals with limited resources to access careers in an economically stable field (National Academy of Medicine, 2010).

The profile of the student nurse has changed over the last thirty years. For example, in 1995, just 17.6% of enrollees in basic nursing education programs self-identified as members of racial or ethnic minority groups. By 2018, that number had nearly doubled to 32.4% (National League for Nursing , 2019). In addition, the percentage of male students in entry programs ranges from 11-15% depending on program, and students over the age of 30 range from 18-64% (National League for Nursing, 2019). Increasing the diversity of the profession of nursing is essential to ensuring an interculturally competent and demographically diverse workforce that mirrors the nation's changing profile and supports efforts to decrease health disparities and health inequities across populations (Phillips, 2014).

These changes in the learner population, coupled with demands of the health care industry, have necessitated a re-envisioning of the nursing educational process. Traditional formats no longer meet the needs of today's adult learner or that of an evolving health care industry. The principles of adult learning theory become even more important when educating learners with varied life experiences. Adult nursing students have a well-established sense of self, are purpose driven and motivated, prefer a hands-on approach to learning, and come to the educational setting with defined goals in mind. Adopting a new approach to nursing and health care education involves competency-based, time-variable instruction, which allows students to progress through a defined program of study at their own pace with faculty offering feedback and guidance along the way. Students can accelerate through content that is easily mastered while allocating more time to subjects that require more intense study.

Faculty must reconsider current performance evaluation processes and develop new training strategies to support the full assessment-feedback cycle (Josiah Macy Jr. Foundation, 2017). One such strategy is experiential learning. Experiential learning is self-directed, learner centered, and is effective in meeting a variety of learning styles. Nursing is a practice-based profession. Increased engagement through experiential learning strategies can increase student engagement and provide more meaningful learning experiences. When used effectively together, classroom, simulation, and clinical experiences promote critical thinking, increase clinical judgement, and provide the opportunity to relate concepts learned in the classroom to real clinical experiences through active experimentation. Case studies, simulation, and role play are examples that use real life experiences that can bridge the gap between classroom and practice (Murray, 2018).

Simulation: A Valuable Tool for Clinical Learning

Simulation-based nursing education is a valuable, complementary tool for augmenting on-site, real-life clinical experience. Simulation allows students to learn technical and non-technical skills, develop clinical reasoning and decision-making abilities, and gain interprofessional team communication opportunities in a safe, controlled environment. It also serves as a reliable educational assessment method (Jones, 2015). During the COVID-19 global pandemic, hospitals, clinics, and other health care facilities closed their doors to students to maintain mission-critical operations and limit potential COVID-19 exposures. Student learning transitioned to online coursework, and simulation-based training became a necessity for providing students with opportunities for clinical practice they would not have otherwise.

Simulation is defined as “a technique that creates a situation or environment to allow persons to experience a representation of a real event for the purpose of practice, learning, evaluation, testing,

or to gain understanding of systems or human actions" (Lopreiato, 2016, p. 33). Simulation offers valuable, scheduled, on-demand learning that may be difficult to obtain predictably in real life. It allows student nurses to develop hands-on skills, critical thinking, decision-making, and cultural awareness as well as critical teamwork behaviors including trust, leadership, communication, and conflict resolution.

Moreover, the simulated experience can be customized to accommodate a range of learners from novices to experts. Simulated experiences allow beginners to gain confidence and muscle memory for tasks in preparation for the more demanding aspects of clinical care. Simulation offers experts opportunity to master complex procedures and demonstrate care for persons with rare conditions that simply do not occur readily enough in real life clinical settings to provide opportunities for practice. Use of simulation educational training methods helps to fill these gaps (Society for Simulation in Healthcare, 2019).

Best Practices for Simulating Pediatric Clinical Experiences

A critical aspect of simulation is constant feedback, which is primarily provided through debriefing, and offers opportunities to model guided reflection, provide external motivation, and consider how the experience might affect future practice--all crucial steps to improving performance (Jones, 2015). The rapid pace of student clinical practicums within actual health care environments can limit opportunities for effective review of student experiences and suggestions that contribute to improving clinical performance. By contrast, controlled, simulated learning experiences can include the use of tools such as video recording as part of the debriefing process. The addition of video provides an unbiased view of the simulation but also aids in supporting feedback and targeting needed improvements.

A number of resources are available to guide faculty in providing purposeful and effective simulation experiences for their students. The *International Nursing Association for Simulation and Learning (INASL) Standards of Best Practice* (2016) provides eleven criteria, best practices, and evidence-based guidelines to ensure high quality simulation experiences and outcomes for students. The National League for Nursing's *Simulation Innovation Resource Center* (2021) provides online courses and an abundance of simulation literature.

A landmark study conducted by Hayden et al. (2014) for the National Council of State Boards of Nursing (NCSBN) validated that up to 50% of the clinical experience could be replaced with simulation with no differences in student outcomes. This multi-site, multi-state study examined the differences in knowledge and clinical competence between three groups of students who participated in either 10%, 25%, or 50% simulated clinical experiences as a substitution for their traditional clinical experience. These students showed no significant differences in either clinical competence or knowledge at time of graduation. Even so, it is important to underscore that students taking part in the study also participated in traditional clinical education in all settings and no one content area was completely replaced by simulation (Hayden, 2014).

The use of simulation has practical limitations, including cost of equipment (e.g., mannikins, computers, audio-visual equipment, etc.), and the cost and availability of standardized patients (paid actors). In addition, the simulated experience is only as good as the debriefing and feedback provided by faculty. Providing appropriate educational resources for faculty employing this modality is paramount. In addition to cost, availability, and restrictions for mannikins and standardized patients, there are limitations in mannikin size and characteristics, which are of particular importance when learning to care for the pediatric patient. Low, mid, and high fidelity mannikins, the current mainstay of this educational modality, do not adequately or accurately represent the varied ages and sizes of the

child population, nor do they reflect the increasing diversity of the U.S. population in appearance. Moreover, pediatric standardized patients are essentially nonexistent for a variety of ethical, logistic, and practical reasons.

The Benefit of Onsite Pediatric Clinical Education

Children are not little adults. Real-time contact and clinical practice with pediatric patients are necessary for student nurses to grasp fundamental concepts of child and family communication and the impact of trauma, injury, and acute or chronic disease on child growth and development. Additionally, actual interaction with diverse pediatric populations ensures that students have the opportunity to learn about physical and cultural variations, allowing them to develop self-awareness when providing care to children and families who may be different from themselves. These differences extend beyond race, ethnicity, socioeconomic status, language, and religion to include sexual orientation, gender identity, obesity, disability, and behavioral illnesses. Expansive exposure to differences within the child and family population is particularly important for addressing implicit bias, which contributes to exacerbating health disparities and health inequities that are prevalent among certain populations. In addition, real-life, hands-on care of children and families in the clinical setting introduces student nurses to a potential area for professional specialization in pediatrics—an area in which experts project a significant future workforce shortage of pediatric-competent nurses.

Expanding Ideas about Where Health Care for Children Is Delivered

In today's changing health care environment, the care of children occurs in many places beyond hospitals, clinics, and urgent care settings. Children receive care in homes, daycare centers, schools, summer camps, rehabilitation facilities, and community settings where county or federal services are

provided. Traditionally, nursing education programs have focused on pediatric in-patient hospital care. As health care continues to move toward ambulatory settings, educators need to consider the wealth of opportunities that exist for pediatric clinical nursing education in alternate sites of care.

Hendrickx et al. (2020) described positive student learning outcomes from a pilot study that placed student nurses in day and overnight camp settings for children with various chronic illnesses. Students placed within camps for children with Type I diabetes mellitus (T1DM) described positive experiences in learning about helping children manage insulin pumps, test blood glucose levels, master carbohydrate counting, and deal with the socioemotional toll of living with T1DM.

Dabney and colleagues (2017) described positive nursing student learning outcomes from experiences in caring for children within elementary and high school settings under the guidance of a licensed school nurse. The partnership between licensed school nurses and student nurses was rated by both groups as positive, and licensed school nurses reported that significant student nurse contributions helped them meet the many child health demands in the school setting. Resha (2016) reported improved care of children as a result from partnerships between schools and nursing education programs.

As part of *America's Promise School Project*, Pohl et al. (2017) studied performance of nursing students placed in elementary and secondary schools as compared to students placed in traditional hospital-based pediatric settings. Students in school placements also were assigned to provide assessment of a family of a child with special health care needs through a structured home visit. Following both groups' 96-hour clinical rotations, students were assessed for pediatric knowledge, communication, pediatric assessment skills, critical thinking skills, and technical skills. Results demonstrated no statistical difference between groups.

Limited research exists as to how best to tap into nontraditional clinical settings. The National Academy of Medicine (2010) suggests that relationship building between academic nursing programs and community providers is integral to success. Educators need to promote the benefits that community settings may gain by having student nurses in their facilities. Community pediatric health care organizations that provide clinical experiences for nursing students benefit from having the added opportunity to assess a student's potential as a future employee. Because of the ebb and flow of funding, many community-based pediatric health care settings operate with limited staff and resources. Student nurses are an excellent resource to provide much needed help while strengthening competencies they will need to provide high-quality care to their communities.

Student nurses in community-based pediatric settings can provide much needed help while they are learning to care for children. In school settings, where licensed school nurses are expected to care for increasing numbers of students with complex needs, student nurses can help to fill the gap by providing public health interventions under the guidance and supervision of school nurses (Dabney et al., 2017; Resha, 2016). In school, camp, daycare, and community program settings, student nurses have opportunity to practice nursing process at the population level. They can assess the needs of a specific population and gain a better understanding of the challenges to be addressed and the care to be provided. They obtain skills in assessing population strengths, utilizing available resources, planning, and evaluating appropriate interventions. Community-based practice learning experiences for nursing students is paramount to creating a competent pediatric workforce. As such, it is imperative for academic nursing programs to prioritize the exploration of community-based opportunities, collaborate with other health care professionals, and discover new, non-traditional clinical sites for pediatric nursing education.

One innovative variation on the traditional inpatient clinical approach is the use of a *dedicated education unit* (DEU), an inpatient unit that is specifically designed as an educational collaboration between an academic nursing program and a healthcare institution (Hunt et al., 2015). In the DEU model, the nursing instructor is present, but student learning is facilitated and improved by the one-to-one relationship with an experienced staff nurse preceptor. In a study that compared learning outcomes between a group of nursing students assigned to a DEU and a group assigned to a traditional inpatient clinical rotation, Nishioka et al. (2014) found that DEU nurse preceptors rated their unit as being more accepting and welcoming of students and described nursing staff as being more firmly committed to nursing students' learning and outcomes. Moreover, students positively responded to consistent learning and positive reinforcement through the preceptor relationship.

Just as preceptor development is critical to nursing student success in the DEU clinical setting, most community or ambulatory-based pediatric clinical experiences rely on the use of nurse preceptors, particularly in cases where one faculty person is responsible for a number of students assigned to a variety of clinical settings. Learning how to assess student learning, design learning strategies, foster reflective and critical thinking skills, and promote positive student outcomes requires a new knowledge and skill set than most nurses use in their clinical work (Bengtsson & Carlson, 2015). In moving from traditional clinical, inpatient models to DEUs and less traditional clinical sites, schools of nursing need to clearly delineate role expectations for faculty, students, and preceptors, and provide supportive and collaborative academic resources to nurses serving in preceptor roles to ensure their development and success (Hunt et al., 2015). Nursing faculty need to frequently communicate with preceptors and students, track students' progress, and retain full responsibility for summative and formative evaluation of students.

Summary

Academic nursing programs across the nation are decreasing pediatric content and limiting or eliminating onsite pediatric clinical experiences for students at a time when the population of children with complex medical conditions, psychosocial trauma or risk factors, and significant health care needs continues to grow. The result is a current and worsening future pediatric nursing workforce shortage. Academic nursing programs have a social contract with society to meet future nursing workforce needs. However, schools of nursing and faculty face current challenges to securing traditional, inpatient pediatric clinical experiences for nursing students for myriad reasons presented in this paper. These challenges can be ameliorated by relying upon the wide array of ambulatory and community-based settings in which children increasingly receive health care services. In summary, we conclude with a list of strategies to increase pediatric clinical opportunities for students.

Five Things Pediatric Nursing Faculty Can Do Now:

1. Meet with your School of Nursing administration to present data about the growing pediatric workforce shortage and the increasing complex medical and psychosocial needs of children that require a firm commitment to developing a competent pediatric nursing workforce.
2. In collaboration with your School of Nursing administration, develop relationships with your local school district's health administration, administrators for local community-based programs such as Head Start or the Supplemental Nutrition Program for Women Infant Children (WIC), and ambulatory pediatric outpatient clinical settings for the purpose of exploring opportunities to place nursing students in their facilities.

3. Explore websites listed in Appendix A to learn more about summer camps in your area that provide camp experiences for children with chronic conditions or special health care needs that may be open to placing nursing students with camp nurses in day and overnight camp settings.
4. In preparation for transitioning nursing students into less traditional, ambulatory pediatric settings that will require the use of nurse preceptors, assess your school of nursing's current programmatic teaching/learning resources for educating and supporting nurse preceptors. Develop resources that are needed to fill any gaps.
5. Collaborate with public health faculty within your school of nursing to develop potential pediatric public health opportunities for students such as postpartum home visits, assignment to and assessment of families with children who have complex health needs, or clinical experiences at maternal-child clinics operated by some public health nursing programs.

Appendix A

Helpful Internet Resources

- American Association of Colleges of Nursing (AACN) The Essential Clinical Resources for Nursing Academic Mission
- American Camp Association
- Association of Camp Nurses
- American Diabetes Association
- Camp One Step
- Implementing an Interactive Pediatric Skills Day
- Improving Assessment Skills: Flipping the Large Classroom Using High-Fidelity Manikins
- International Nursing Association for Clinical Simulation and Learning (INACSL) Standards for Best Practice Simulation
- National League for Nursing's (NLN) Advancing Care Excellence - Pediatrics: Teaching Strategies
- National League for Nursing's (NLN) Advancing Care Excellence - Pediatrics: Unfolding Cases
- National League for Nursing's (NLN) Institute of Simulation and Technology
- National League for Nursing's (NLN) Pediatric Adversity and Early Brain Development Toolkit
- The Center for Disease Control's (CDC) Adverse Childhood Events (ACE) modules
- The Pediatric Toy Project: Teaching Growth and Development Through Play

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