

# Progress and Precision: The NCSBN 2018 Environmental Scan

*National Council of State Boards of Nursing*

*We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. Don't let yourself be lulled into inaction. —Bill Gates*

## Introduction

The annual National Council of State Boards of Nursing (NCSBN) Environmental Scan provides regulators and other nursing leaders with a current, comprehensive portrait of nursing in the United States, including emerging issues and challenges. It describes the current state of nursing and where we are headed, and it asks questions about our readiness to enter the modernized era of health care. As you are reading it, ask yourself: Are we ready to take nursing to the next level? Are educators ready to evaluate their curricula and incorporate new content? Are regulators ready to accept present and future challenges of mobility, workforce, confidentiality issues, new treatment methods, advancements in scope of practice, and, potentially, fresh approaches to opioid addiction? Are state legislators willing to take the necessary steps to pass legislation to modernize regulation and to be an important part of this transformation? Modernization of health care cannot adequately be achieved without the participation of nursing, and a new era of nursing depends on a contemporary and revitalized regulatory system. The environmental scan is present and future based and reflects substantial professional, social, and political changes needed for regulators and other nursing leaders to keep pace with potential health care system transformations.

## The U.S. Nursing Workforce in 2018 and Beyond

Nursing is at the heart of health care. Sufficient numbers of nurses at all levels and the ability to forecast and plan for shortages is integral to safe and quality patient care. For this reason, NCSBN has acted to ensure that researchers have the data required to monitor future workforce needs. In 2017, NCSBN collaborated with the National Forum of State Nursing Workforce Centers to conduct a national workforce study to assess and describe the current RN and LPN workforce (in press). The findings data will be published in the July 2018 issue of the *Journal of Nursing Regulation*.

Individual boards of nursing (BONs) are also collecting workforce data with licensure renewals, which are being deposited into NCSBN's National Nursing Workforce Repository. When all boards can provide these data, nursing will have a profound and accurate database, including population data, with which to analyze the workforce and make predictions.

It is expected that 2018 will be a historic and landmark year for nursing regulation and the nursing workforce. The enhanced Nurse Licensure Compact (eNLC), nursing regulation's newest licensure model, was officially implemented on January 19, 2018. Currently adopted by 29 states, the eNLC enables nurses to receive a multistate license in their state of residence with the privilege to practice in all other states that joined the compact. The eNLC increases public protection as it: (a) mandates specific nursing licensure requirements for participating states; (b) provides improved access to care through greater workforce mobility, allowing nurses to migrate to locations with the greatest need and job availability; (c) enhances telehealth nursing, which can expand the workforce into shortage areas; and, (d) perhaps most importantly, mobilizes nursing care quickly, efficiently, and safely during a disaster. For military spouses who are nurses and who may have to frequently move and change jobs, the eNLC offers an opportunity for many to move without being relicensed. In addition, nurses with compact/multistate licenses have the flexibility to care for patients across state borders without the time and expense of obtaining additional licenses.

## Registered Nurses and Licensed Practical/Vocational Nurses

In 2018 and beyond, workforce mobility will be vital for patients' access to care and nurses' access to jobs as studies predict both shortages and surpluses in the nursing workforce. Currently, the number of employed registered nurses (RNs) per population in each state varies widely, from fewer than 700 RNs per 100,000 population in Nevada to over 1,500 RNs per 100,000 in the District of Columbia (U.S. Department of Labor, Bureau of Labor Statistics, 2017a; U.S. Census Bureau, 2017). Other states with approximately 700 RNs per 100,000 people are California, Georgia, Oklahoma, and Utah. Conversely, South Dakota (1,402 per 100,000), Massachusetts (1,250 per 100,000), and Delaware (1,189 per 100,000) have the highest ratios of employed RNs per population along with the District of

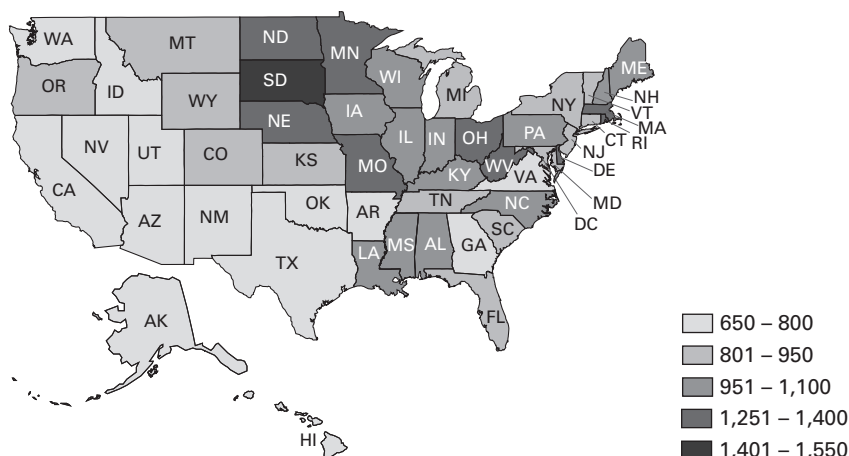
Columbia. Appendix B provides a detailed portrayal of the distribution of RNs and licensed practical nurses/vocational nurses (LPNs/VNs) across the country.

The ratio of employed LPNs/VNs is between 65 and 70 per 100,000 people in Alaska, Oregon, and Utah and over 400 per 100,000 in Arkansas and Louisiana (U.S. Department of Labor, 2017a; U.S. Census Bureau, 2017). States with shortages include Maine and most of the western states except for California, which has slightly more VNs per 100,000 population than its neighboring states. (Figure 1 provides a broad comparison of the numbers of RNs and LPNs across the country.)

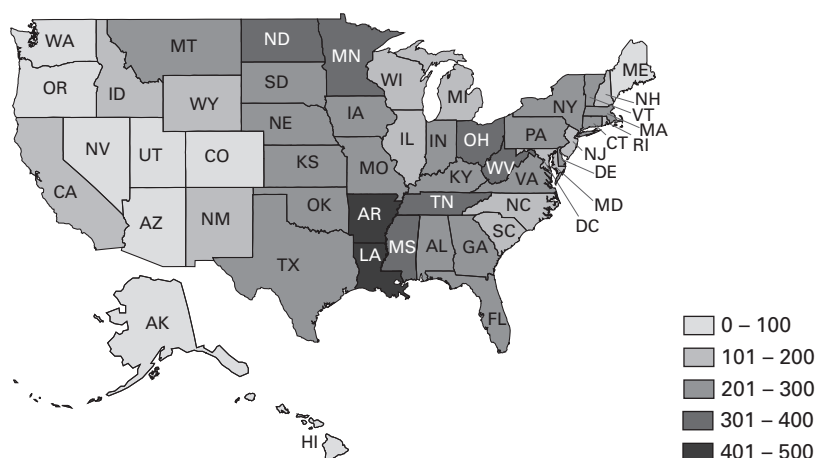
FIGURE 1

### RN and LPN/VN Employment by State\*

#### RN



#### LPN/VN



\*Employed RNs and LPN/VNs per 100,000 people by state

Source: U.S. Department of Labor, 2017; U.S. Census Bureau, 2017.

A number of studies published in 2017 indicated that the nursing workforce needs will continue to fluctuate according to state and region of the country. In 2017, the Health Resources and Services Administration (HRSA) released national projections for the U.S. nursing workforce through 2030 (HRSA, 2017a). Projections made from the Health Workforce Microsimulation Model used nurse data from the American Community Survey along with information reflecting the economy and labor markets. The model estimated the growth in RN supply (39%) will outpace the growth in RN demand (28%) by 2030 resulting in an excess of almost 300,000 RNs nationally. For LPNs, the growth in supply is estimated to be 26% while the growth in demand is expected to be 44%. This imbalance could result in national-level shortage of 151,000 LPNs by 2030; however, the report indicates a shortage of this magnitude is unlikely because LPNs can be educated relatively quickly.

According to the HRSA report (2017) inequitable distributions of nurses exist across states. Seven states are projected to have a RN shortage, and 33 states are projected to have a LPN shortage by 2030. The greatest shortages of RNs are predicted in California, Texas, New Jersey, and South Carolina. Texas and Pennsylvania are expected to have the greatest LPN shortages. Florida, Ohio, Virginia, and New York could expect a surplus of RNs. A LPN surplus is projected for Ohio and California. HRSA's proposed solution is optimal

migration (i.e., nurses moving to states where the in-state supply is less than demand). Thus, nurses would move to or work in areas of greater need. The distribution of the nursing workforce is likely to improve as more states join the eNLC.

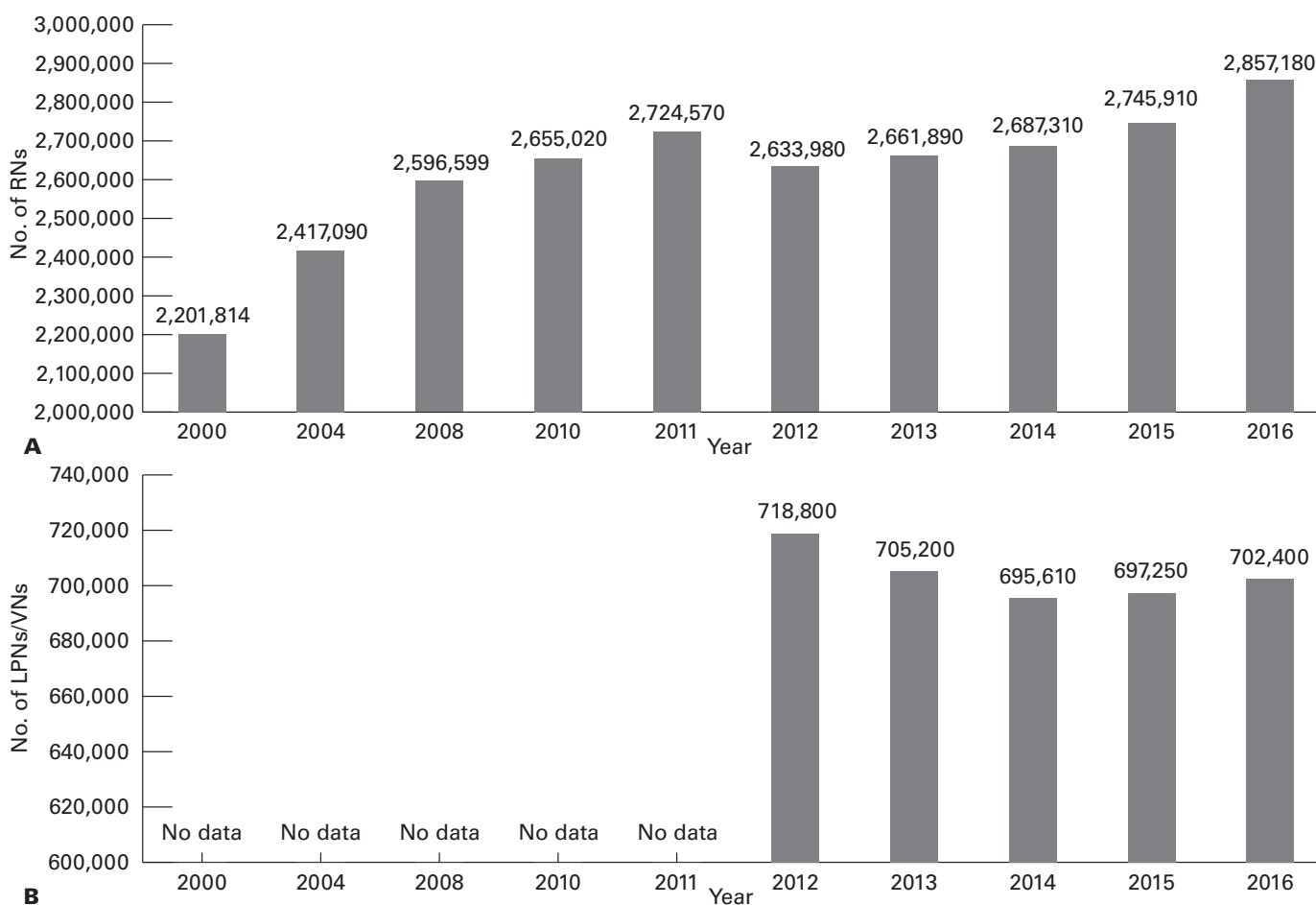
Buerhaus, Skinner, Auerbach, and Staiger (2017) identified four factors affecting the supply and demand of U.S. nurses in the future: (a) aging baby boomers, (b) the number of nurses retiring, (c) health care reform, and (d) the physician shortage. They also forecast regional shortages, rather than a national shortage. The aging baby boomers may exceed both the clinical capacity of the nursing workforce and the number of new graduates with geriatric expertise. The rate at which RNs retire from the workforce could reduce the number of nurses available, particularly in the New England and Pacific Regions (where the number of RNs per capita is lowest), as well as decrease the overall experience level of the workforce. Changes to the Patient Protection and Affordable Care Act (ACA, 2010), such as provisions to increase efficiency and a shift toward value-based purchasing, could result in greater recognition of the cost efficiency of nurses and the expanded roles of RNs in Medicare accountable care organizations. Finally, the physician shortage (Streeter, Zangaro, & Chattopadhyay, 2017) is likely to increase demand for nurses providing primary care, particularly to rural and vulnerable populations.

As of November 23, 2017, the U.S. workforce consisted of 4,015,250 RNs and 922,196 LPNs/VNs\* (NCSBN, 2017e). Of these, 2,857,180 RNs and 702,400 LPNs/VNs were employed in the United States as of May 2016, the most recent statistics available (U.S. Department of Labor, Bureau of Labor Statistics, 2017a).

Although employment data are not as recent as licensing data, they show that the number of employed RNs in the United States has steadily increased since 2012 (Figure 2a), whereas the number of employed LPN/VNs, despite a slight rise from 2014 to 2016, has decreased substantially since 2012 (Figure 2b).

FIGURE 2

### Number of Employed RNs and LPNs/VNs in the United States, 2000–2016



Source: The data for years 2010–2016 are from the U.S. Bureau of Labor Statistics Occupational Employment Statistics (2017a; 2017b). The data for 2000, 2004, and 2008 in the RN graph are from the U.S. Department of Health and Human Services Health Resources Services Administration's National Sample Survey of Registered Nurses (2010).

\* Data regarding all Oklahoma and Hawaii nurses and LPNs/VNs in Louisiana were unavailable and are not included.

The predominant employers of RNs and LPNs/VNs will be hospitals and long-term care facilities, respectively. According to the most recent data from the U.S. Department of Labor, Bureau of Labor Statistics, RNs held an estimated 3 million jobs in the United States in 2016. Of those, 61% were in hospitals. Hospitals were followed by ambulatory health services (18%), nursing and residential facilities (7%), government facilities (5%), and educational services (3%). The same data showed that LPNs/VNs held approximately 724,500 jobs in 2016. The largest employers of these nurses were nursing and residential care facilities (38%), hospitals (16%), physician offices (13%), home health care services (12%), and government facilities (7%) (U.S. Department of Labor, Bureau of Labor Statistics, 2017a).

It is anticipated that a greater proportion of nursing employment will be seen in ambulatory and home care settings as health care shifts to those settings (Bauer & Bodenheimer, 2017). In fact, Bauer and Bodenheimer (2017) predict a dramatic shift in the RN role in primary care as the demand for primary care providers and services increases alongside payment models that allow for add-on payments for RN-delivered services in primary care settings. As primary care practices use team models to greater extent, the scope of RNs in primary care will include managing chronic disease, leading complex care management teams, and coordinating care between the primary care practice and communities (Bauer & Bodenheimer, 2017).

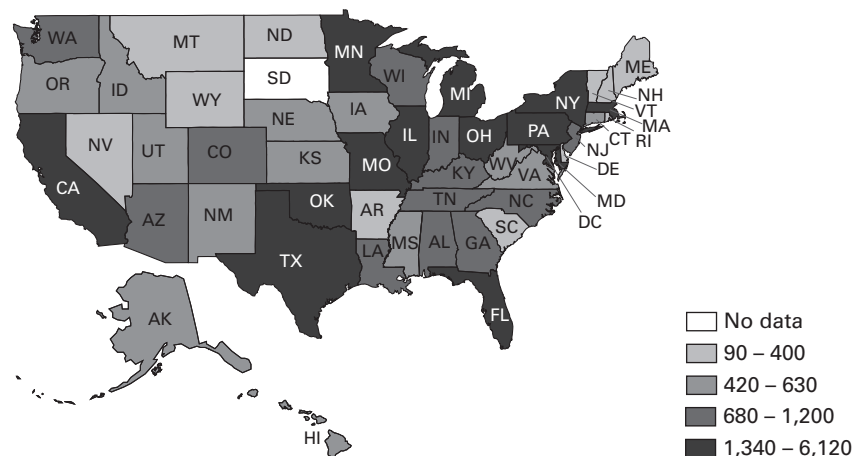
## Emerging Members of the Health Care Team

### Community Health Workers

As new health care models move care into the community setting and as the need for providers in rural and health shortage areas increases, some RN and LPN responsibilities may be provided by nonnursing personnel such as community health workers (CHWs). As of May 2016, 51,900 CHWs were working in the United States, with the highest levels of employment in individual and family services, local government, outpatient care centers, general medical and surgical hospitals, and physician offices (United States Department of Labor, Bureau of Labor Statistics, 2017c). Figure 3 depicts employment of CHWs by state. States with the highest employment of CHWs include California, New York, Texas, Massachusetts, and Illinois (United States Department of Labor, Bureau of Labor Statistics, 2017c).

FIGURE 3

### Employment of Community Health Workers by State, May 2016



Source: United States Department of Labor, Bureau of Labor Statistics, 2017c.

CHWs differ from home health aides, who may assist with activities of daily living, and from certified nurse assistants (CNAs), who may assist in carrying out a nursing plan of care. Community health workers are often part of the patient's community and usually share the language, ethnicity, and life experiences of their patients. This commonality helps them be uniquely valued by both the patient and the health care team (Rural Health Information Hub, 2017). In 2017, CHWs gained federal recognition for their ability to help address social determinants of health (Malcarney, Pittman, Quigley, Horton, & Seiler, 2017). CHWs are more likely to have "linguistic and cultural concordance" with their patients, which contributes to their effectiveness in reaching underserved communities and addressing health disparities (Malcarney et al., 2017; Chapman & Blash, 2017).

Job responsibilities for CHWs often include home visits, follow-up after acute care discharge, monitoring chronic diseases, and educating patients in the management of their conditions. They also act as specialists who educate the community on best practices for specific conditions, provide outreach and convene disparate stakeholders to coordinate a targeted outreach effort. Typical competencies

for CHWs include patient advocacy, documentation, understanding legal and ethical boundaries, healthy living interventions, and collaboration with other team members such as nurse case managers and social workers (Larson, 2016).

Evolving care models and innovative trials of new models place the CHW in several health team configurations. They may be involved in health screening outreach, care team navigation, and community advocacy. CHWs may also be part of the “pathways” model that targets patients most at risk and directs the care team to focus on specific strategies likely to improve outcomes. Disease-specific models incorporating the CHW include asthma, diabetes, HIV/AIDS, hypertension, and maternal/child health. CHWs can assist with goal setting, culturally competent patient education, transportation, and structured visits and support (Minnesota Department of Health, 2016).

The addition of CHWs is occurring across various health settings. For example, a study on CHWs found a “shift in CHW employment settings from community-based organizations to hospitals and health systems that hire them directly” (Malcarney et al., 2017).

Few studies have suggested role independence. The preponderance of recent studies suggests CHW roles are well suited to round out team-based care solutions and bridge the patient’s life experiences to the planning and strategies of the larger health team (Guerra Luz, 2017). Further study is needed to determine if CHWs enhance team-based outcomes and interventions.

### **Community Paramedics**

States are increasingly using emergency medicine technicians (EMTs) and paramedics to provide cost-effective, nonemergency and preventive health services to communities (Miller, 2017). The community paramedicine (CP) model of care allows EMTs and paramedics to practice beyond their traditional emergency-response roles. CP programs are designed to integrate with existing health care resources (Innovative California community paramedicine project shows early success, 2017) and use specially trained community paramedics who have typically completed 200 extra hours of study (Sequeira, 2017). CP programs currently operate in 33 states and the District of Columbia (Coffman, Wides, Niedzwiecki, & Geyn, 2017) and are being piloted in several states including California, Colorado, Maine, Minnesota, North Carolina, and Texas (Sequeira, 2017). The expanding roles of EMTs and paramedics may help reduce the amount of emergency department (ED) visits (Fotsch, 2015), avoid unnecessary ambulance transports, reduce hospitalizations and readmissions (O’Meara, Furness, & Gleeson, 2017), and create greater access to quality care for rural populations (Ashton, Duffie, & Millar, 2017; Bennett, Yuen, & Merrell, 2017).

A recent independent study evaluated 13 CP programs being piloted in California (Innovative California community paramedicine project shows early success, 2017). The San Diego program saved \$45,607 per month in health care costs, reduced the number of 911 calls (by frequent 911 callers) by 52%, and connected patients to more appropriate medical and social services (Coffman et al., 2017). Cost savings and improved clinical outcomes have also been reported in Colorado, Nevada, New York, and Texas (Bennett et al., 2017). As with any emerging role, CP programs face implementation challenges. In many cases, payers may not reimburse CP programs for non-transport related emergency medical services (EMS) (Bennett et al., 2017) and training programs lack a consistent set of standards (Glenn et. al, 2017). Although pilot studies have been promising, such evaluations often do not include a comparison group to solidify the evidence (Bennett et al., 2017).

CP programs face legislative challenges as well. Only seven states have laws specific to CP scope of practice (Glenn et. al, 2017), and existing legislation often prevents EMTs from engaging in activities beyond emergency response (National Association of Emergency Technicians, 2017). As community paramedics find their role in the interdisciplinary team, CP programs must be mindful of scope-of-practice conflicts that may occur with other health professions (Fotsch, 2015; National Conference of State Legislatures, 2017a). On the other end of the spectrum, legislation in some states is contributing to the blurring of scope of practice lines concerning health care professions such as EMS workers and paramedics. In 2017, for example, Illinois became one of a small but growing number of states that allows EMS personnel to administer Schedule II through Schedule V controlled substances without the order of a prescriber (Ill. Legis., 2017b).

Currently, the EMS community is working on a 2-year project called *EMS Agenda 2050*—with a mission to write a new *EMS Agenda for the Future*. The project’s Technical Expert Panel has provided numerous opportunities for stakeholders as well as the public to engage in agenda development (EMS Agenda 2050, 2017). The landmark *EMS Agenda for the Future* (1996) envisioned EMS as community-based entities with expanded roles contributing directly to population health outcomes (Bennett et al., 2017). Due to the changing landscape of U.S. health care systems, this 20-year-old vision will continue to adapt.

### **Implications for Regulators**

Evidence suggests both CHWs and community paramedics fill valuable and much-needed roles in the interdisciplinary health care team by providing care planning, patient education, and health care cost reduction in a culturally competent manner, particularly in underserved areas (National Conference of State Legislatures, 2017a). Questions regarding oversight and role remain. It is important for nursing regulators to play an active part in role development and, possibly, regulation of these providers. The articulation of roles between these providers may need refining, along with decisions regarding certification, delegation, and oversight of multidisciplinary teams.



## Advanced Practice Registered Nurses

This year marks the 10-year anniversary of the Consensus Model for APRN Regulation, Licensure, Accreditation, Certification and Education (The Consensus Model), and despite substantial advances, not all states have completely embraced it. Regulators have consistently advocated for the Consensus Model elements and, in 2018, an enhanced legislative effort will help states adopt it. This strong advocacy is based on profound evidence that advanced practice registered nurses (APRNs) are a key part to solving the nation's access-to-care crisis.

HRSA's health workforce simulation model (based on 2013 data) examined the geography of primary care in 2025 and made the following national-level projections: the United States will experience a shortage of primary care physicians by 2025 (–9% of 2025 demand) and a surplus of primary care certified nurse practitioners (CNPs) in 2025 (62% of 2025 demand) (Streeter, Zangaro, & Chattopadhyay, 2017). The authors noted that, in the 37 states with provider shortages in 2013, 27 states restricted CNP practice. They also estimated that if CNP scope of practice remains unchanged, CNPs will have restricted scopes of practice in over half the states that are projected to have a shortage of at least one type of primary care provider in 2025 (Streeter et al., 2017).

The removal of restrictions on APRNs has far-reaching implications for many of the nation's health care challenges. The U.S. rate of maternal deaths, for example, has increased over the past 15 years, resulting in the highest rate in the developed world, whereas other countries have a consistent downward trend (Martin & Montaigne, 2017). Across the U.S., 46% of counties do not have an obstetrician-gynecologist and 56% are without a certified nurse midwife (CNM) (Improving Access to Maternity Care Act, 2015). Frequently, restrictions in prescribing authority, required collaborations, medical staff credentialing, and third-party reimbursement inhibit CNM practice in rural areas (Patterson, Hastings-Tolsma, Duneman, Callahan, & Tanner, 2017). A study by Yang, Attanasio, & Kozhimannil (2016) found that states with restrictive policies for CNMs have fewer nurse midwives overall to care for the needs of the population.

Unrestricted APRNs can also make a difference in the U.S. mental health crisis. Across the United States, more than 100 million individuals are affected by mental health provider shortages (HRSA, 2017b). CNPs make more mental health visits than any other provider (Kurtzman & Barnow, 2017; Yao, Rose, LeBaron, Camacho, & Boling, 2017). Primary care CNPs, psychiatric mental health CNPs, and clinical nurse specialists are frequently restricted from practicing to the fullest extent of their education and are perhaps dissuaded by those restrictions from choosing to practice in the areas of greatest need.

One study examined the effects of APRN practice and prescribing barriers on state health by comparing health outcomes across two states with (Alabama and Mississippi) and two states without (Utah and Idaho) APRN practice and prescribing restrictions (Sonenberg & Knepper, 2017). Outcome data from Utah, Idaho, Alabama, and Mississippi were compared to determine the effect practice restrictions had on obesity, diabetes, and hypertension. Utah and Idaho were high performers and Alabama and Mississippi were low performers in managing those conditions as measured in the Commonwealth Fund State Health Rankings. The study demonstrated that Alabama and Mississippi were most restrictive to APRN practice and prescribing and had the most vulnerable populations, higher numbers of rural populations, and more Medicaid and Medicare beneficiaries compared with Utah and Idaho. They also had greater challenges in having adequate provider numbers, leading to a conclusion that restrictive and inconsistent nurse practitioner policy may contribute to population health disparities (The Commonwealth Fund, 2017).

APRNs also have a role in workforce expansion and the changing dynamic of care delivery in the United States. Years of accessible and affordable care challenges drive care delivery strategies that are innovative and aimed at providing new solutions. APRNs have been shown to fill gaps in access to care better than other providers (Baldwin, 2017). Studies (Poghosyan & Carthon, 2017; Spetz, Skillman, & Andrilla, 2017) have demonstrated that when barriers are removed, the APRN workforce expands into rural and underserved areas.

## 2018 Advancements in APRN Regulation

APRN legislative efforts in 2017 mirrored those of previous years. Many bills were introduced, but only a few states enacted legislation. South Dakota and Illinois are examples of states that saw substantial advancements in their APRN laws. Through enacting Senate Bill 61, South Dakota gained full practice and prescribing authority for CNMs and CNPs (S.D. Legis., 2017). This required a written collaborative agreement for CNMs and CNPs who have practiced fewer than 1,040 hours and moved regulation of these roles entirely under the BON (American Association of Nurse Practitioners, 2017; S.D. Legis., 2017). In Illinois, the passage of House Bill 313 (Ill. Legis., 2017a) allows APRNs to work without a collaborative agreement if they have 4,000 hours of collaborative clinical experience with a physician and complete 250 hours of continuing education. The bill keeps in place the previous authorization of full practice authority in hospitals and hospital-affiliated surgery and outpatient centers. The bill requires use of the Prescription Drug Monitoring System and consultation with a physician for prescribing certain controlled substances (Korte, 2017).

NCSBN has tracked state legislative efforts to adopt the APRN Consensus Model since 2008 (NCSBN, 2008). Although steady gains have been realized, state restrictions on practice and prescribing autonomy continue to limit APRN contributions to state health outcomes. An association (not causality) of state health rank and levels of restrictions was demonstrated by using the Commonwealth Fund (2017) state health outcomes report of 2017 and by comparing state rankings to APRN practice and prescribing authority (NCSBN, 2017f). Comparing states' health rankings with the number of APRN roles that allow full practice authority showed that those states

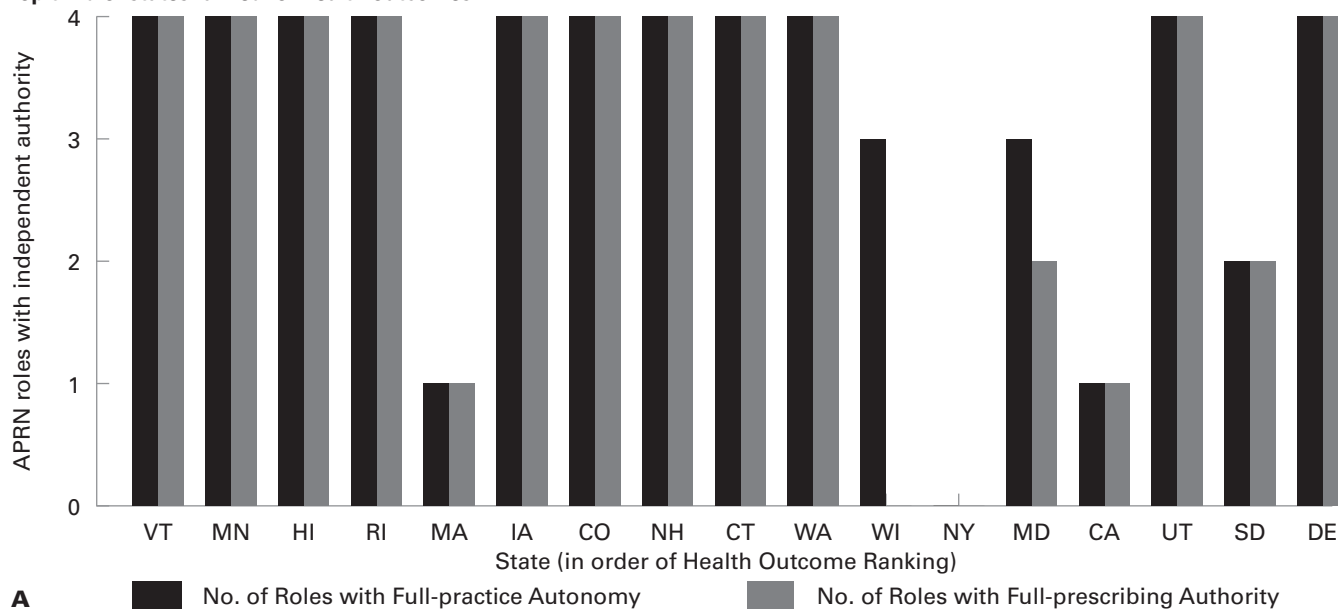
with the most restrictions were those with the poorest health outcomes on the 44 measures of health reported by Commonwealth. Additionally, the comparison showed that the states with the best health outcomes have the lowest restriction scores (Figure 4).

Additionally, NCSBN is engaged in APRN legislative activities at the state level. In 2018, NCSBN introduced a new APRN Campaign, “Together Advancing the State of Healthcare,” which includes a televised commercial, state-targeted website, and other resources (Nursing America, 2017). Four to five states will be selected annually for the length of the campaign. Two of the states that were selected in 2018, Mississippi and Florida, introduced legislation for advancing APRNs during the 2018 legislative session (Fla. Legis., 2018; Miss. Legis., 2018).

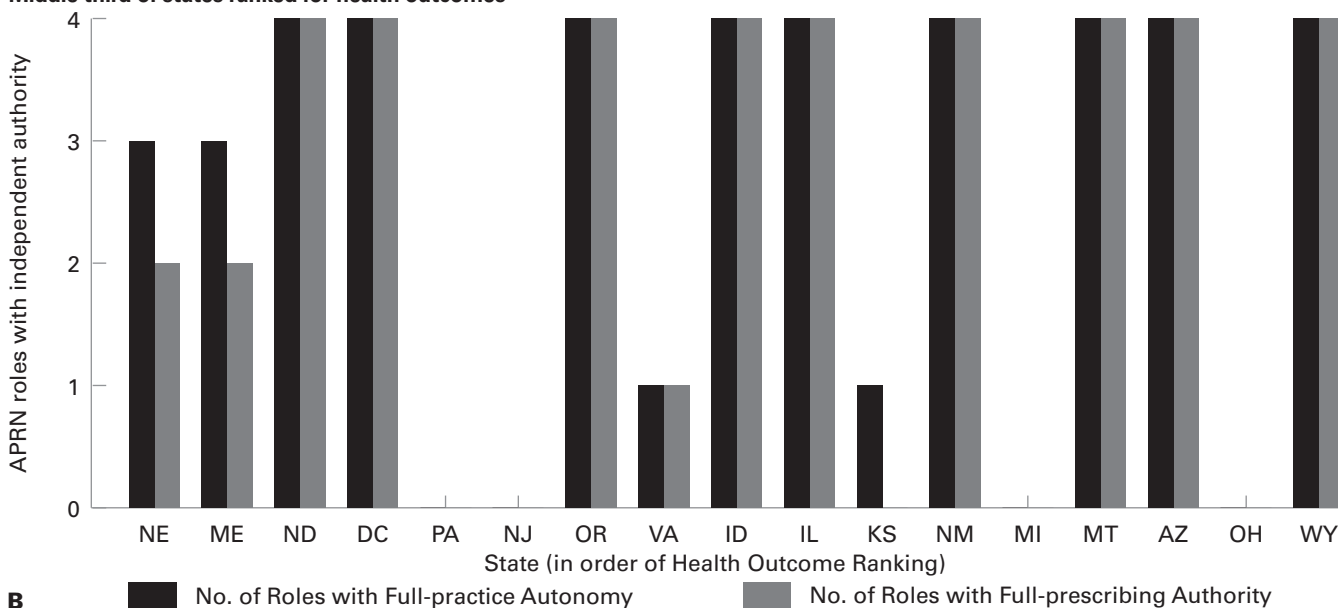
FIGURE 4

### APRN Autonomy Compared With State Health Rankings

#### Top third of states ranked for health outcomes

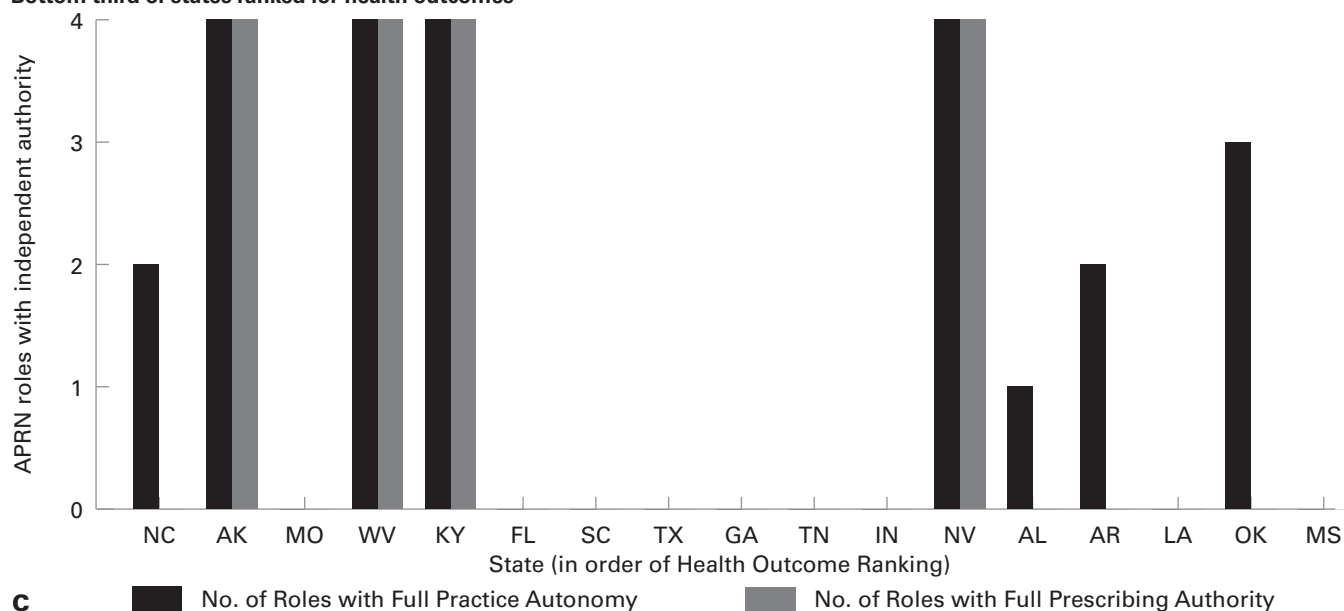


#### Middle third of states ranked for health outcomes



## APRN Autonomy Compared With State Health Rankings *(continued)*

Bottom third of states ranked for health outcomes



Note. These charts show the association between health outcome ranking and the Advanced Practice Registered Nurse authorities granted in each respective state. In each graph, states are ordered from left to right according to their ranking of health outcomes.

It is difficult to understand why state legislators persist in placing barriers to APRN practice and prescribing if those barriers may contribute to health disparities. One possible explanation may be found in a recent study reported in the *Southern Economic Journal*. In this study, state-level political spending by physician interest groups was compared with hospital organizations and nursing interest groups. The study found that increased political contributions made by physician groups in response to specific bills aimed at removing barriers to APRN practice and prescribing was associated with decreased likelihood of lifting restrictions on APRNs. Nursing political spending did not appear to have a great effect on these legislative efforts; however, spending by hospital groups was associated with a greater likelihood that the state would allow greater autonomy (McMichael, 2017).

The Veterans Health Administration amended their medical regulations in 2017 to allow U.S. Department of Veterans Affairs facilities to adopt full practice authority for clinical nurse specialists, CNMs, and CNPs (U.S. Department of Veterans Affairs, 2017), which would increase access to care, particularly in underserved areas (Federal Register, 2017). Clearly, federal bodies recognize that removing restrictions to APRNs is a public solution to certain health care challenges. State legislators and regulators can review their state health outcomes and examine how lifting restrictions on APRNs may impact improvements (Poghosyan & Carthon, 2017; Spetz, Skillman, & Andrilla, 2017). APRNs can improve access to care, particularly to primary care; target care of special populations such as maternal care, addiction care, mental health care, and anesthesia care; and offer many other services with safety and quality.

## Nursing Education

An adequate workforce is dependent upon the number and competency of nurses in practice and upon a robust pipeline of prepared nurses from nursing education programs. The following sections examine the current number of programs, the numbers of faculty and students enrolled, and new teaching methods for preparing the workforce of the future.

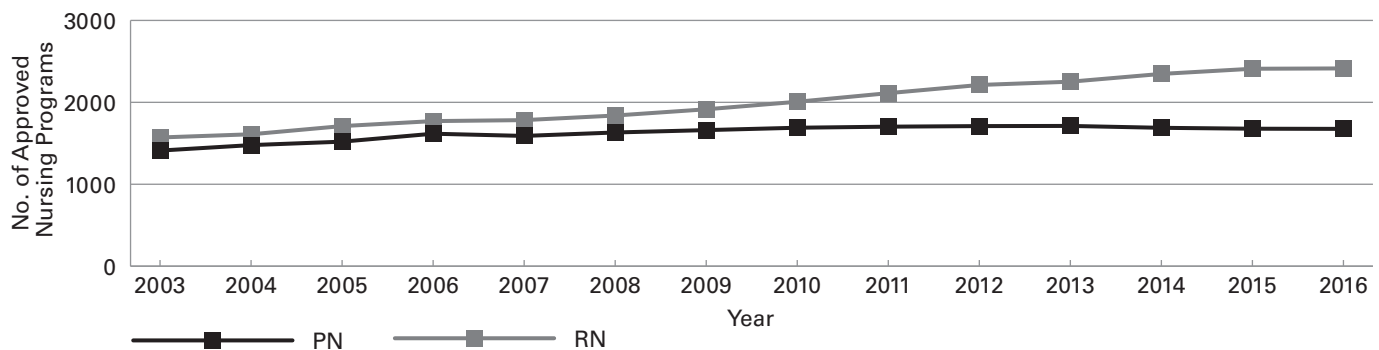
### Nursing Education Programs

NCSBN has been collecting trend data on new RN and LPN education programs\* in the United States since 2003. Although the number of RN programs has increased by 54%, and LPN programs by 19%, since 2003, the number of new programs began to level off for RN programs in 2015 and for LPN programs in 2011 (Figure 5). It remains to be seen whether the recent slight downward trend of LPN programs from 2013 to 2016 will continue in the current economic climate (NCSBN, 2017f).

\* Number of new programs minus the number of programs closed during the year.



FIGURE 5

**Number of Approved Nursing Programs from 2003–2016**

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>PN</b>	1411	1478	1520	1617	1590	1632	1661	1690	1703	1710	1712	1689	1678	1676
<b>RN</b>	1571	1610	1710	1771	1783	1839	1915	2007	2112	2212	2252	2347	2410	2414

Note. PN = practical nurse; RN = registered nurse. Source: NCSBN (2017f).

The decrease in the LPN/VN workforce and predicted shortages (referred to in the previous section) are probably related to the leveling off/decrease in nursing programs. LPNs/VNs play a substantial role in the nursing workforce and their diminishing numbers may lead to their roles being performed by nonnursing providers such as CHWs.

### Nursing Students

Similar to the number of nursing programs, the number of first-time takers of the National Council Licensure Examination (NCLEX)-RN and NCLEX-PN has leveled off and demonstrated a slight downward trend from 2015 to 2016\* (NCSBN, 2017a). From 2015 to 2016, the number of diploma graduates taking the NCLEX-RN increased by 138, and the number of baccalaureate graduates taking the examination increased by 1,780. However, the number of associate degree in nursing graduates taking the examination decreased by 3,726 (NCSBN, 2017a). Reporting on their enrollment and graduation survey (responses from 874 baccalaureate and higher degree programs), the American Association of Colleges of Nursing (AACN) (Fang, Li, Kennedy, & Trautman, 2017), found a 3.6% increase in enrollment of generic (entry-level) baccalaureate students (6,947 students). Like the RN workforce, that increase is regional, with the North Atlantic and Midwest each having a 5.2% increase and the South and West seeing decreases of 1.5% and 2.2%, respectively. Fang et al. (2017) also discovered graduations of generic baccalaureate students increased by 2.4% across the nation.

Several states have enhanced opportunities for baccalaureate education in nursing. For example, in Texas, the enactment of Senate Bill 2118 authorized certain community colleges to offer baccalaureate degree programs in various fields, including education, technology, nursing, and areas with a demonstrated workforce need (Tex. Legis., 2017). However, Fang et al. (2017) reported that, despite the increases in baccalaureate student enrollment and graduation from 2015–2016, 50,598 qualified applicants were not admitted to generic baccalaureate programs in 2016 (Fang et al., 2017). Additionally, the National League for Nursing (NLN) (2017) reported 59% of PN, 78% of associate degree in nursing, 42% of diploma, and 62% of baccalaureate programs surveyed (655 schools of nursing) turned away qualified applicants. Both AACN and NLN (Fang et al., 2017; NLN, 2017) reported that lack of faculty and clinical sites were the two biggest reasons for programs not accepting qualified applicants.

One limitation to these surveys was that they only captured application numbers, not individuals, meaning many who applied to multiple nursing programs (which many do) were counted multiple times. Still, these statistics are important for forecasting future needs.

### New Graduates

The best data for new graduate employment come from the National Student Nurse Association (NSNA). New graduate RNs are surveyed annually to determine employment rates and potential obstacles to graduates acquiring their first job. In NSNA's 2017 Survey (Feeg & Mancino, 2017), responses from 5,169 new graduates indicated a new graduate RN national employment rate of almost 90%, which is up 5% from the previous year (Feeg & Mancino, 2017). The percentages vary slightly across the country, from 94% and 92% in the Central and South regions and 88% and 85% in the Northeast and Western regions (Feeg & Mancino, 2017). In the past, there

\* RN first-time NCLEX pass rates 2015 = 157,882; 2016 = 157,073; PN first-time NCLEX pass rates 2015 = 50,958; 2016 = 47,284

were more regional differences than in 2016 (Feeg & Mancino, 2017), and overall, employment rates of new graduates have improved since 2010.\* In addition, employment statistics for new nurse graduates are substantially higher than those of graduates from other fields. Only 54.1% of graduates across all disciplines reported having a job offer at graduation, compared with 90% of nursing graduates (National Association of Colleges and Employers, 2016).

Program types differ in employment rates. Graduates from generic baccalaureate programs fare better (92% employment rate) than those from associate degree (84% employment rate) or accelerated baccalaureate\*\* (84% employment rate) programs. The employment rate for those attending for-profit schools was slightly less upon graduation (88%) than for those attending private nonprofit (92%) and public schools (90%) (Feeg and Mancino, 2017).

### **Nursing Faculty**

The lack of faculty and faculty vacancies affect our nursing workforce. The AACN 2017–2018 survey (Li, Kennedy, & Fang, 2017), with responses from 832 baccalaureate programs, found an 8.6% increase in the total number of full-time budgeted positions from 2016–2017; however, the number of full-time vacancies stayed about the same (7.3%). This trend was seen last year as well and continues to suggest that nursing programs are expanding. In 2017–2018, 128 (15.4%) schools reported that they have no full-time vacancies but still need additional faculty. This finding may indicate that, in some nursing programs, faculty are overburdened. Nursing schools in need of more faculty positions reported that the two most important barriers to adding full-time employees were insufficient funds and administrative unwillingness to commit to additional full-time positions in nursing. Interestingly, the full-time faculty vacancy rates varied only slightly by region (9.9% – 9.0%), unlike previous years of this survey.

### **Graduate Nursing Education Programs and Students**

In 2007, 1,874 Doctor of Nursing Practice students enrolled in 53 programs, which grew to 25,289 students in 313 programs by 2016 (Fang et al., 2017). This enrollment growth has not been seen in PhD nursing students. In 2007, 3,982 students were enrolled in PhD programs and in 2016, 4,912 were enrolled.

### **New Teaching Strategies to Prepare Tomorrow's Workforce**

#### **Competency-based Health Care Education**

In 2017, the Josiah Macy Jr. Foundation published recommendations from its conference “Achieving Competency Based, Time-Variable Health Professions Education.” The conference brought together 39 health professionals consisting of physicians, nurses, pharmacists, educational theory and reform experts, medical residents and accreditors (Josiah Macy Jr. Foundation, 2017). The group reviewed the current health care system challenges, including fragmentation, slow diffusion of biomedical advances, disruptive technology (such as electronic health care records), and ineffective collaboration across health care professions. In response to these challenges, the group proposed revolutionizing the current approach to health care education. Their commitment to competency-based education was demonstrated by the following Consensus Vision Statement (Josiah Macy Jr. Foundation, 2017, p. 5):

*With the achievement of competency-based, time-variable health professions education, we envision a health care system in which all learners and practitioners are actively engaged in their own education and continuing professional development to improve the health of the public. In this system, learners and faculty partner to co-produce learning, all practitioners are life long learners, and all health care environments place a high value on learning.*

Competency-based education differs from traditional time-based education in the learning continuum, the assessments, the faculty relationships, and the design of the educational experiences. Competency-based education is tailored to the needs of the learner and allows the individual to advance at his/her own pace.

The Macy Conference on Competency-Based Education recommendations include (Josiah Macy Jr. Foundation, 2017):

- I. Redesign the complete educational system, including curricula, learning environments, and faculty development;
- II. Create a continuum of education, practice, and training that spans formal education, clinical training, and professional practice;
- III. Implement a robust program of assessment that supports competency-based, time-variable training and links educational programs to improved health care outcomes;
- IV. Enable technologies to facilitate both learning and assessment throughout the continuum of the practitioner;
- V. Design, implement, and evaluate educational programs so that outcomes focus on preparing graduates to advance societal goals, including improved patient care and practitioner performance and satisfaction.

Although the group called for full implementation of a competency-based model requiring all stakeholders, including regulators, to be involved in this transformation, no nurse regulators were invited to the conference. Since regulators play an important role in nursing education, it is imperative that regulators be at the table for future discussions.

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\* 2010 NSNA new graduate employment rates: South – 64%; West – 41%; Northeast – 50%; Central – 60%.

\*\* Accelerated baccalaureate programs are programs where students already have a baccalaureate degree in another discipline and complete coursework to become a nurse, but in less time than it would take a generic baccalaureate student.

### **Professional Identity Formation in Nursing**

Professional identity formation is a “sense of oneself that is influenced by characteristics, norms, and values of the nursing discipline, resulting in an individual thinking, acting, and feeling like a nurse” (Godfrey & Crigger, 2017). First described by Benner, Sutphen, Leonard, & Day in 2010, professional identity is beginning to replace earlier related terminology, such as professional role and professionalism. More than a decade ago, physicians determined that fostering professional identity formation in their students was essential and developed a model where roles, competencies, and identities explain professional identity formation. Day et al. (2017) describe a prenursing course that facilitates professional identity formation. They assert that starting identity formation early in the nurse’s career will impact a new nurse’s readiness to practice and may contribute to a more successful transition to practice. Some strategies for fostering identity formation are using guided reflection, clarifying values, sharing personal information within a safe environment, and building relationships (Day et al., 2017; Godfrey & Crigger, 2017). Professional identity formation also may play a major role in ethical reasoning, which is of prime importance to regulators as many violations reported to BONs are related to a lack of ethical and professional decision making (NCSBN, 2015).

### **Nursing Education and Regulation**

BONs continually strive to improve upon the effectiveness of nursing education regulation, and in 2018, regulators will be exploring new ways to regulate and evaluate nursing programs. Currently, most\* BONs approve nursing education programs using standards developed in their rules and regulations, which are often based on NCSBN’s model education rules (NCSBN, 2017c). In a survey conducted by the Texas BON in 2017, BONs reported that the biggest challenge in regulating nursing education programs was the lack of evidence-based regulatory quality indicators of nursing programs for making program approval decisions. The next most commonly reported challenge was the shortage of qualified faculty (often a regional challenge) and what strategies to use when qualified faculty are not available. What leeway should BONs allow given this challenge? Faculty and administrator turnover has also been a challenge, and these have been linked to poor program outcomes (NCSBN unpublished findings, 2017). The lack of clinical sites and clinical site barriers (such as restricting the number of students or not allowing students to administer medications) are other major challenges when approving programs.

BONs also reported difficulties with students participating in clinical experiences within their states while enrolled in a program in another state. At issue is how to regulate these programs, particularly when the standards between the states might differ. Nursing programs must adhere to the education requirements in each state where their students are located, a fact of which faculty are often unaware. Similarly, BONs continue to have difficulties with distance education components of for-profit programs not meeting their state standards.

In 2018, NCSBN, along with the help of nursing regulators from across the country, will be conducting studies to learn more about nursing education and the many variables that impact outcomes. These results may provide more insight for regulators when evaluating a nursing program.

Regulators also should be aware of changes occurring in health care education, curricula, and teaching methods to ensure students are safe and competent practitioners when they graduate. Regulators should be involved in the competency-based education discussion so they can be aware of the changes and be able to provide input into program development.

## **New Environments and Settings for the Nursing Workforce**

### **Home and Community**

As mentioned earlier, health care delivery will increasingly move into the home and community settings. This move will be facilitated by remote patient monitoring that will become a routine part of nursing care. Patients who used to be required to stay in hospitals or other facilities for monitoring will be able to return home, instead receiving monitoring through wearable devices that simultaneously monitor pulse, respiratory rate, blood pressure, and dozens of additional parameters (Sheikh, Bates, Wright, & Cresswell, 2017).

### **Microhospitals**

Recognizing the need to deliver hospital-level care directly to a community that would not otherwise have it, many communities are embracing microhospitals—a smaller facility of eight to 15 beds that handles acuity nearly comparable to a larger community hospital. Although microhospitals have been in existence for some time, their popularity is surging. The goal of these facilities is to bring pre-acute care into neighborhoods with a higher level of service than might be found at a retail clinic or urgent care facility. As part of a larger health system, microhospitals often facilitate ongoing patient engagement in otherwise-remote communities in a cost- and operationally efficient manner. Their small size makes them versatile enough to be successful in areas with widely varied population

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\* Mississippi and New York nursing programs are regulated by Higher Education, and Utah’s BON has no authority over nursing programs; however, the state does require national nursing accreditation.

densities and gives them the advantage of more personalized care that enhances outcomes as well as the patient experience (Becker's Hospital Review, 2017).

Microhospitals help reduce systemic bottlenecks, mitigate long waits for services that may occur at larger hospitals and raise hospital system visibility within the community. They also address the evolving needs of consumers as millennials and subsequent generations leave their mark on many industries with their demand for instantaneous, convenient service (Eagle, 2017).

Although microhospitals can be designed to scale with a community as it grows, the driving purpose behind microhospitals is to create a point of access—a patient-focused node of a health network that can better follow patients through their continuum of care in a way that keeps costs down, ultimately achieving the Triple Aim. These facilities may only contain a small number of beds, but they offer more services than a typical urgent care center, with scaled-down EDs, imaging and diagnostic suites, and dietary and environmental services. Microhospitals do have service limitations, and higher-acuity patients may still need to be transferred to traditional hospitals (Eagle, 2017).

The model is not without challenges, the first of which is keeping the microhospital small. Over time, many health systems find incentives to grow a microhospital larger and offer more services, which interferes with cost effectiveness. Needs analyses in each community may help guide executives to specific services that may make a facility successful. An additional challenge is that the facility operations, including staffing, workflow, and culture, are very different from a full-scale hospital (Becker's Hospital Review, 2017).

The health care framework also must adjust to the microhospital model. One barrier faced by microhospitals is that current regulations do not account for their existence. From zoning laws to facility licensure laws, the current regulatory framework can be challenged when faced with licensing a facility as a hospital if it does not offer surgical services or does not have a separate ED entrance. Recognizing the benefit microhospitals provide to communities, state licensing boards have been flexible with their interpretations; however, organizations developing microhospitals stress that being familiar with the regulations is key (Eagle, 2017).

### **Pop-up Clinics**

The aim of pop-up clinics is to alleviate the problems caused by large groups of people who cannot access health care, particularly in medically underserved areas and regions with large uninsured populations. Appearing temporarily in malls, convention centers, and fairgrounds, these temporary free clinics attempt to address the gaps in care that take heavy tolls on certain populations. Pop-up clinics often rely on volunteer providers and are staged by nonprofits and funded by donors (Simon, 2016; Gabriel, 2017).

### **Telehealth**

Telehealth continues to grow as a major topic of discussion among health care advocates on Capitol Hill and in the Trump administration. REACH Health recently conducted a survey of health care executives on telehealth and its successful implementation. Fifty-one percent of executives surveyed listed telehealth as a top or high priority, and of those, 99% saw success in implementing telehealth services in their organizations. Those that listed telehealth services as a medium or low priority still saw great success in implementation. Most executives surveyed listed their top goals as improving patient outcomes, convenience, and satisfaction and providing rural communities access to specialists (REACH Health, 2017).

With the advancement of home and community care, telehealth and other ways to access care are being expanded and will call for increased mobility of nurses and decreased barriers to licensure.

## **Enhancing Mobility of the Nursing Workforce and Decreasing Barriers**

### **The Nurse Licensure Compact**

For nursing, adoption of the eNLC is a rapid and straightforward answer to access to care needs and workforce mobility.

In 2000, the Nurse Licensure Compact (NLC) became the first health care compact to be signed into law. Under the compact, nurses obtain a single license enabling them to practice in any other compact state. By 2015, the NLC had 25 member states; however, membership stalled due to differences in state licensure requirements. As a result, the eNLC was developed in 2015 to increase the number of compact states through use of uniform licensure requirements, including the required use of criminal background checks (NCSBN, 2017b).

Ten states in 2016 and 17 in 2017 enacted the eNLC. The eNLC officially became effective on July 20, 2017, with the entrance of the 26th state, North Carolina, into the compact. As of January 2018, 24 of the original compact states transitioned to the eNLC, with Rhode Island remaining in the original NLC. The states from the original NLC that are transitioning to the eNLC are required to undergo a 6-month withdrawal period from the original NLC; the most recent of these were Colorado and New Mexico, which began their withdrawal periods on January 18, 2018. After that time, as there will be only one state remaining in the original NLC, it will be dissolved.

After a 6-month transition period from the effective date, eNLC implementation occurred on January 19, 2018, which is the date when nurses with multistate licenses began practicing in other eNLC states. Nurses holding multistate licenses under the old compact as of the effective date are automatically grandfathered into the new compact, while states new to the compact began issuing multistate licenses as of the implementation date (Special Delegate Assembly of the National Council of State Boards of Nursing, 2015).

Nurses in more than half the states will be affected by the NLC changes in 2018. As states remain in the original NLC, withdraw from it to enter the eNLC, or join the eNLC for the first time, the locations where nurses' multistate licenses are valid will change on an ongoing basis. Nurses and their employers should check the Nursys® system regularly to determine if their privilege to practice in a state has changed. Communication with licensees will be important for BONs participating in either version of the compact.

The NLC has proven effective in providing access to care, improving efficiency of hospital systems and institutions and facilitating distance education. The advantages of a state being a member of the NLC were evident in 2017, as two hurricanes hit Southeastern states and others were affected by fires. States who were part of the NLC expedited the mobilization of out of state nurses responding to the disasters, which helped assure public protection. All nurses with a multistate license who enter a state to assist during a disaster have met uniform licensure requirements—the highest standards set in nursing.

### **The APRN Compact**

The APRN Compact affords the same advantages to APRNs that the NLC provides for RNs and LPNs/VNs. With the APRN Compact, the APRN is issued a license in his or her home state and may practice telephonically or physically in another compact state without applying and paying for an additional license(s).

The essential elements of the APRN Consensus Model (Appendix D), which include practicing and prescribing without required supervision by, or collaboration with, another profession, serve as the uniform licensure requirements for adoption by states and form the basis of the APRN Compact. Once the compact is effective, it will allow an APRN in a participating state to practice on a multistate privilege in other participating states.

North Dakota, Iowa, and West Virginia introduced the APRN Compact during the 2017 legislative session. North Dakota's House Bill 1096 was enacted into law and became the third state to join the APRN Compact (N.D. Legis., 2017). Neither Iowa Senate File 430 nor West Virginia House Bill 2521 had success in 2017 in part due to growing opposition led by the American Society of Anesthesiologists (ASA). This barrier was particularly true of Iowa's legislation, which was opposed by the Iowa Society of Anesthesiologists in the Senate Committee on Human Resources (Iowa Legis., 2017).

North Dakota's APRN Compact legislation received support from multiple parties. The North Dakota Hospital Association's Workforce Committee endorsed four interstate health care compacts the North Dakota legislature was considering (North Dakota Board of Nursing, 2017). The compacts included the Interstate Medical Licensure Compact, the Physical Therapy Compact, the eNLC, and the APRN Compact (North Dakota Hospital Association Regulatory Subcommittee, 2016 ). The North Dakota Center for Nursing also endorsed the APRN Compact (North Dakota Center for Nursing, 2017). Their policy recommendation stated:

*Licensure compacts are a vital recruitment tool to ensure a healthy workforce of LPNs, RNs, and APRNs practice in North Dakota. The compacts streamline processes to bring out-of-state nurses to North Dakota and facilitate the provision of telenursing services. (North Dakota Center for Nursing, 2017)*

Supported as a tool for workforce development across the state, the APRN Compact was enacted into law with overwhelming support from both chambers and the governor (N.D. Legis., 2017).

Opposition to the APRN Compact from the AMA (2015, 2017) and ASA (Philip & Plagenhoef, 2016; ASA, 2017) has been documented; however, the AMA and ASA have not expressed opposition to the NLC or eNLC, the EMT compact, the medical compact or the physical therapy compact. Despite the ability and knowledge of APRNs to practice safely and effectively, the AMA and ASA continue to only target and oppose the APRN compact.

### **Precision Medicine and Changing Roles and Education**

Besides having an adequate supply of nurses, the nursing workforce must keep pace with changes in health care delivery and medicine. Practice and education must reflect these changes as health care progresses. One of the most important advancements promising to impact all aspects of health care is the Precision Medicine Initiative announced by President Obama during his 2015 State of the Union Address (State of the Union, 2015). This enterprise promises to have many implications for the nursing workforce including how nurses at all levels are educated and practice.

Simply described, precision medicine aims at “discovering the right treatment, for the right patient, at the right time” (National Institutes of Health [NIH], 2018). It considers a plethora of factors and circumstances that differ widely from individual to individual



and can cause huge variations in illness and outcomes. Prevention, diagnosis, and treatment is based on the patient's genome, lifestyle, environment, and other personal characteristics that enable scientists to target their efforts to the individual and eliminate variations in outcomes.

The Precision Medicine Initiative will require new nursing skills and knowledge, including big data analytics, genetics, pharmacogenomics, and use of new technology. New discoveries will lead to more effective diagnostics and cures, and treatments will advance for pain management, nausea, and fatigue. Health care providers in general will have a better understanding of why some interventions are better for one patient than they are for another. The social determinants of health will also play a major role in these discoveries. Thus, a patient's zip code may be as much a determining factor for health as their genetic code (Pirschel, 2016).

The NIH named precision medicine among the priorities on its 2016–2020 research agenda (NIH, 2016), which includes funding for nurse scientists focusing on precision medicine (National Institute of Nursing Research, 2017). Additionally, precision medicine is a substantial portion of the 21st Century Cures Act, and the American Academy of Nursing has named it as its top research priority for the coming years (Eckardt et al., 2017).

These advancements will also necessitate changes and additions to the undergraduate and graduate nursing curricula. Most states require continuing education for licensure renewal. Although states may not want to be prescriptive in their requirements, the many aspects of precision medicine new to nursing could provide content for future continuing education courses. Courses that help nurses learn precision medicine concepts, family assessment, genetic testing, pharmacogenomics, and other emerging aspects of precision medicine will be needed.

The changes also call for a rigorous assessment of the current nursing curriculum at both the prelicensure and graduate levels. As precision science advances and is incorporated into routine health care practices, nurses will need to understand genetic testing and educate and discuss its implications with patients and families. Nurses will need to interpret and understand a cadre of new tests as well as their ethical, legal, and social implications as part of their role in providing patient-centered and personalized care. Genetics, genomics, and pharmacogenomics will need to become routine parts of the nursing curriculum and practice at all levels. Determining how to integrate this knowledge with lifestyle and environmental factors will also need to occur (Cheek, Bashore, & Brazeau, 2015; Williams et al., 2016). To function safely and effectively in this upcoming era, nurses will require the ability to use technology and health information. Students pursuing graduate degrees must be able to analyze big data and translate findings into innovative care management (Eckardt et al., 2017).

## **Health Care Delivery: New Modalities for the Workforce**

In addition to precision medicine, the nursing workforce will be subject to numerous other health care delivery advances over the next few years, particularly those involving health care technology, electronic health records (EHRs), and team-based care.

### **Health Care Technology**

Health care technology is looking beyond individual patients to whole populations. Not only will population-level data collection and analysis direct the future of health care, but population segments will use health care and health care technology differently. The healthy, those at risk for future health conditions, and those already managing a disease may have different patterns of health care and technology use. As patterns are identified to capitalize on how these populations interact with health information technology, new delivery methods tailored to keep each user engaged in their health management will emerge (Graver, 2016).

### **Electronic Health Records**

The future vision of health care combines EHR data with the full knowledge of the system's past data and real-time, point-of-care data to improve outcomes. The uses of such analytics are diverse. In critical care, analytics are helping care teams identify worsening patients and pinpoint the appropriate time to intervene. Other systems are predicting required staffing levels (Hoppszallern, Goldsteen, Sanford, Ross, & Schooler, 2016) or predicting which patients are at increased risk for complications (e.g., central line infections) (Vesely, 2017). Such data can also impact health care costs. For example, the data can provide the cost-to-effectiveness ratio of a new medication. Additionally, artificial intelligence (AI) such as IBM's Watson has shown promising results using analytics to match cancer patients to clinical trials, which typically takes a great deal of manpower (Hoppszallern et al., 2016).

From a regulatory perspective, analytics provide insight into the success or failure of quality improvement measures and error prevention. For example, one health system used data analytics to: (a) identify the rate at which nurses were using a workaround to circumvent safety features on a medical device; (b) determine the factors that led to the workaround, and; (c) change the system to discourage the workaround and motivate proper device use (Karchner, 2017).



Realizing the full potential of combining EHR and analytics will depend on integrated and compatible EHRs across an entire health system, which is a strong incentive for a change that some health systems may be reluctant to make. Clinicians also would benefit from additional training to ensure effective use of the system's data sets (Hoppszallern et al., 2016).

The rising interconnectivity of health care is also challenging facilities to think about how their data can be advantageous outside of their system. The Mayo Clinic, for example, has developed an *AskMayoExpert* tool that allows external clinicians to ask the Mayo staff questions, provides e-consultations with Mayo physicians, and accesses Mayo treatment guidelines (Hoppszallern et al., 2016).

This paradigm shift creates a new level of patient centeredness—connecting and coordinating care teams not physically located together. For example, one team member can capture data such as medical histories for use by the entire health team across multiple care settings (Graver, 2016). Other health systems use integrated, cloud-based EHRs to identify patients with gaps in care such as those who have gone too long without a test or screening (Karash, 2016). The adoption and growing capability of health informatics and EHRs are one reason the health workforce can meet the burgeoning health demands of an ever-growing population and are also one catalyst for the evolution of health care worker roles.

At the facility level, the shift to EHRs has been a major driver of change in staffing arrangements. Facilities using EHRs tend to have different staffing patterns and greater flexibility in staffing than those who do not (Frogner, Park, & Pittman, 2017), and nurse staffing flexibility was found to be statistically significantly associated with positive patient experience (Oppel & Young, 2017).

Taken all together, the potential implications of widespread EHR adoption and its effects on treatment, processes, staff deployment, and connectivity may benefit patient outcomes in many ways in the coming years.

### **Team-Based Care**

Since CNPs and physician assistants now comprise over 40% of the primary care workforce, and as the number of primary care physicians continues to decline, a reorganization of health systems and care may be the solution to the impending primary care shortage (Streeter et al., 2017). Health care needs are already beginning to surpass the system's scope (Poghosyan, Liu, Shang, & D'Aunno, 2017). In the move toward precision medicine, interdisciplinary teams composed of an array of health professional experts take on more active roles in patient care. Rather than merely serving as support for the physician, other interdisciplinary team members use their individual specialized skills to focus on managing certain aspects of a patient's care. Organizing care with interdisciplinary teams shows promising data, not only with the comprehensiveness of care and patient satisfaction, but also with provider self-confidence and primary care team satisfaction. Studies have demonstrated that interdisciplinary teams are a worthwhile alternative to our current health care structure (Purcell, Zamora, Tighe, Li, Douraghi, & Seal, 2017).

In fact, studies suggest that transitioning to an interdisciplinary team in a health care setting can result in comprehensive care and reduced health care costs (O'Reilly, Lee, O'Sullivan, Cullen, Kennedy, & MacFarlane, 2017).

Several studies have demonstrated interdisciplinary team care, used in conjunction with palliative care, can improve oncologic results (Bakitas, El-Jawahri, Farquhar, Ferrell, Grudzen, & Higginson, 2017). Trials involving care for patients with advanced cancers by interdisciplinary teams demonstrated positive outcomes, such as improved quality of life, reduced anxiety, decreased caregiver distress, and, in several cases, reduced costs (Bakitas et al., 2017). Additionally, a study that investigated the use of interdisciplinary bedside rounds at a U.S. academic medical center found communication and coordination of care were optimized when an interdisciplinary model of care (IMOC) involving daily rounds between the interdisciplinary team and their patients and their families was used (Malec, Mork, Hoffman, & Carlson, 2017). Before the medical center began an IMOC, nurse participation in the daily rounds and use of best practices fluctuated (Malec et al., 2017). Outcomes after implementing an IMOC included increased nurse participation, a more patient-centered method of care, and improved staff cooperation and collaboration (Malec et al., 2017). Despite promising IMOC results, evidence suggests this model is being underutilized or seeing different levels of use across health care, such as in heart failure patients (Kavalieratos et al., 2017). Perhaps it can achieve greater outcomes if optimally used and widely adopted.

The emphasis on team-based care leads to questions about team-based regulation. Which board is responsible when an interdisciplinary team is involved in a complaint? Will the boards communicate to find out more facts and arrive at a fair resolution for all, or will each board handle their own licensee negating the fact that an entire team was involved in the incident? To take the first steps towards a more collegial role and to establish a foundation for team-based regulation, in 2018, regulators from health care disciplines will work together to align their codes for reporting violations to the National Practitioner Databank. This collaborative step is important for aligning procedures and processes.

## **Federal Legislation Impacting the Nursing Workforce**

### **The 21st Century Cures Act**

President Obama's signing of the 21st Century Cures Act (The Cures Act) (2016) in December 2016 began a new era heralding the modernization of medical science. This landmark legislation provides a trajectory for new discoveries and innovations in health care

by funding precision medicine, the Cancer Moonshot, and the BRAIN Initiative, which address devastating diseases, mental health issues, and the opioid crisis and offer new promise and hope for millions. The Cures Act also calls for FDA drug and device approval reform. It impacts hospitals and other institutions by promoting the interoperability of EHR and the use of telehealth and social media tools for preventing, monitoring, and treating illnesses (Landi, 2016). The Cures Act is accelerating EHR adoption and places special requirements on its capability and application. For example, it promotes the interoperability of everyone's medical record to allow for "complete access, exchange, use, and secure transfer of all electronically accessible information under applicable federal or state law" (Johnson, Thaul, & Bagalman, 2015).

Although the benefits may seem distant, the Cures Act authorizes \$4.8 billion total to the NIH through 2026 in hope of speeding results so those living today may benefit from the research (University of San Francisco Health, n.d.). Along with the possibilities it offers the future of health care, the Cures Act presents nursing with new challenges and opportunities inherent in precision medicine, EHR adoption, and use of telehealth and social media.

### **Deferred Action for Childhood Arrivals**

The Trump administration stopped accepting renewal applications for the Deferred Action for Childhood Arrivals (DACA) program in September 2017. DACA was instituted in 2012 and allowed approximately 800,000 undocumented immigrants who came to the United States as children to legally live and work in the country. Unless addressed by Congressional legislation, DACA recipients will no longer be able to legally live and work in the United States once their current exemption expires. An estimated 20% of DACA recipients work in health care. Consequently, this policy change will impact a substantial number of nurses and nursing students (Heredia Rodriguez, 2017).

### **Telehealth**

Numerous bills have been introduced in Congress to assist telehealth service implementation and address telehealth reimbursement through Medicare and Medicaid. Notably, the U.S. Senate passed The CHRONIC Care Act (2017), which incentivizes care coordination and updates Medicare telehealth payment policies for care delivered to patients managing chronic diseases. Other bills addressing Medicare telehealth payment policy that have received substantial attention in Congress include The CONNECT for Health Act (2017) and The FAST Act of 2017 (2017). CMS is considering changes that would allow for additional telehealth reimbursement. In the CMS CY 2018 Physician Fee Schedule final rule, the agency created a remote patient monitoring benefit that would pay caregivers who obtain digitally transmitted biometric data from patients (CMS, 2017a).

### **Veterans Affairs**

The U.S. Department of Veterans Affairs (VA) continues to pursue changes to policies impacting veterans and the VA's health care workforce. The VA has issued a proposed rule that would allow VA-employed health care professionals to practice telehealth across state lines with only one license and would allow veterans to receive telehealth services outside of a federal facility. The proposed rule may be finalized in 2018 and is in line with The VETS Act of 2017 (2017), which would codify these changes in statute. The VA is also currently implementing full-practice authority for APRNs in the vast majority of their facilities nationwide.

### **Update on The Affordable Care Act**

The ACA was passed by Congress and signed by President Obama in 2010. The ACA aimed to provide health care insurance to all U.S. residents by mandating insurance coverage via a federal government or state-based website, prohibiting insurance coverage denials based on pre-existing conditions, subsidizing insurance payments for residents who cannot pay premiums, and expanding Medicaid (ACA, 2010).

The ACA has been resilient in the face of multiple repeal attempts in 2017. In May, the House passed H.R. 1628 (the American Health Care Act), a repeal bill that would have eliminated tax penalties for those without health insurance, allowed higher premiums for some pre-existing conditions, and rolled back the state expansion of Medicaid (Kaplan & Pear, 2017; Levitt, Damico, Claxton, Cox, & Pollitz, 2017). The Congressional Budget Office and Joint Committee on Taxation estimated that enacting the American Health Care Act would reduce federal deficits by \$119 billion from 2017 to 2026 and increase the number of uninsured by 23 million by 2026 (Congressional Budget Office, 2017a).

The Senate was unable to pass the American Health Care Act. Although most senators found the House bill to be flawed, consensus could not be reached on how to improve it (Cunningham, 2017b). A bill that would have eliminated the insurance mandate and removed subsidies while leaving the Medicaid expansion intact was narrowly defeated in July (Eilperin, Sullivan, & Snell, 2017). A proposal to end the insurance subsidies and coverage requirements and to replace the arrangement with block grants to individual states did not reach a vote. Analyses of the proposal showed that more than 30 states would have lost federal money for health coverage, with Medicaid expansion states being the hardest hit (Goldstein & Eilperin, 2017). The year ended with no indication that a repeal of the ACA was on the horizon (Cunningham, 2017c).

In November 2017, voters in Maine opted to expand Medicaid via ballot initiative. Efforts are underway in Alaska and Idaho to have similar initiatives considered (Phillips, 2017). Thirty-three states have now expanded Medicaid (Kaiser Family Foundation, 2017).

Since implementation of the ACA, the proportion of U.S. residents without health insurance has continually declined. In 2016, the percentage of people without health insurance dropped to 8.8%, down from 9.1% in 2015 (Obama, 2016), and 39 states saw declines in the rates of the uninsured from 2015. Declines occurred more rapidly in Medicaid expansion states (Barnett & Berchick, 2017).

Numerous recent studies demonstrated the positive effects of Medicaid expansion under the ACA. Medicaid expansion resulted in substantial coverage gains among low-income populations and specific vulnerable populations (Antonisse, Garfield, Rudowitz, & Artiga, 2017). Coverage gains under Medicaid expansion have been particularly noteworthy in small towns and rural areas (Levey, 2017b). Colorado, Nevada, New Mexico, Oregon, and South Carolina have had particularly large declines in the rate of uninsured children (Hoagley, Wagnerman, Alker, & Holmes, 2017).

Medicaid expansion has also improved access to care, service utilization, affordability of care, and financial security among low-income populations (Antonisse et al., 2017). Since the expansion, Denver has seen a decline in ED use and an increase in clinic outpatient service use (Levey, 2017a). The increased access to care is particularly important in rural environments where hospital closures are becoming common (Weber & Miller, 2017).

Medicaid expansion has also demonstrated positive economic outcomes (Antonisse et al., 2017). An analysis of Michigan's Medicaid expansion program showed additional state tax revenue had offset nearly all the state's new spending on expansion (Ayanian, Ehrlich, Grimes, & Levy, 2017). An assessment of all health spending from 1991 to 2014 showed that the spending growth in Medicaid expansion states 1 year after ACA implementation was similar to the growth in states that did not expand Medicaid. This similarity was due to Medicaid expansion increasing the share of relatively less-expensive enrollees in the Medicaid beneficiary population mix (Lassman et al., 2017).

Uncertainty over Congressional and Trump administrative policies toward the ACA has led to dramatic increases in 2018 policy premiums for those who purchase premiums from insurance exchanges (Sanger-Katz, 2017). Insurer uncertainty about the fate of the individual mandate has led insurers to raise rates beyond expectations (Kamal, Cox, Shoaibi, Kaplun, Semanskee, & Levitt, 2017). In Nevada, rates are expected to rise by nearly 37% (King, 2017). In Georgia, some increases will be over 50% (Abelson, 2017). For some farming families in Illinois, the rising costs are prohibitive with annual premiums topping \$40,000 (Murphy, 2017).

The rise in insurance rates is partially due to the lack of competition in some counties. Although every county in the nation has at least one carrier on the insurance exchange (Smyth & Murphy, 2017), many have only one insurer that serves them (O'Donnell, 2017).

Not all states are experiencing increased rates, and some are using novel approaches to keep rates in check. An innovative reinsurance program in Minnesota will ensure rates remain stable for the foreseeable future (Minnesota Commerce Department, 2017). California's insurance exchange, Covered California, has been an "active purchaser" of insurance, negotiating with insurance companies for better rates and excluding insurers that do not meet their specifications (Cohn, 2017a).

The costs of premiums for low-income U.S. individuals buying insurance on the marketplace have been kept down by using cost-sharing payments made directly to insurers from the federal government (Healthcare.gov, 2018). In April, President Trump expressed interest in ending those subsidies (Cunningham, 2017a), but relented under pressure from Republicans in Congress (Lauter, 2017) and the courts (Goldstein, 2017). Tax credits would have accounted for the increased premiums that would have resulted from ending subsidies. The Congressional Budget Office estimated that ending these cost-sharing payments would have increased the federal deficit by almost \$200 billion over the next 10 years (Congressional Budget Office, 2017b).

Finally, reductions in premium costs are also being addressed via new approaches to Medicaid delivery that differ from federal guidelines. Numerous states have applied for Section 1115 Medicaid demonstration waivers for administering work requirements, drug screening and testing, eligibility time limits, and disenrollment for nonpayment of premiums (Hinton, Musumeci, Rudowitz, & Antonisse, 2017).

Public opinion on the ACA is still mostly divided along party lines, although its overall favorability has increased in the past year (Kirzinger, DiJulio, Hamel, Wu, & Brodie, 2017). A majority of those who identify themselves as independent would prefer that Republicans and Democrats work on improving how the ACA is functioning rather than focusing on repealing it or passing a national health care plan. Trump voters with ACA marketplace experience are desirous to see the coverage become more affordable with respect to out-of-pocket costs and high deductibles. Overall, Trump voters who gained Medicaid coverage were happy with the coverage and expressed concerns about what would happen if it was repealed (Tolbert & Antonisse, 2017).

### **ACA Implications for the Near Future**

The ACA has weathered a storm of repeal attempts and will remain as the law governing health care in the near future. But whether it remains in place long term may depend on the attitude of the Trump administration. A bipartisan group of House members have looked to improve the ACA by: (a) providing mandatory funding for cost-sharing reduction payments; (b) creating a stability fund that states can use to reduce premiums and limit insurer losses; (c) changing the mandate that employers provide coverage to only companies

with 500 or more employees; (d) repealing the 2.3% sales tax on medical devices; and (e) modifying sections of the ACA to help states innovate and enter into compacts to allow the sale of coverage across state lines (Jackson, 2017). Similarly, bipartisan efforts are being made by senators (Groppe, 2017) and governors (Cohn, 2017b) to modify the ACA. But President Trump has opposed such measures and has moved to slash advertising grants designed to help U.S. individuals sign up for coverage (Goldstein, 2017). The president has also opposed state waiver efforts to control the price of premiums and, once again, discussed the possibility of ending the cost-sharing payments to insurers (Eilperin, 2017). The resolution of these conflicting approaches (possibly through the 2018 election cycle) will determine the fate of the ACA in the coming years.

## **Social Issues Impacting the Nursing Workforce**

### **Violence in the Health Care Workplace**

Health executives recently coined the phrase “the Quadruple Aim,” which is defined as the Triple Aim (improved outcomes, patient experience, and cost efficiency) plus health care professional satisfaction (O'Connor, 2017). To address the fourth aim, both health systems and professional organizations are taking a closer look at a long-standing issue that is finally coming to the foreground—violence in the health care workplace.

Violence against nurses in the workplace, especially in the hospital setting, has been referred to as an epidemic and is considered a serious health hazard and public health crisis. According to the U.S. Department of Labor (2017), workplace violence is defined as “any act or threat of physical violence, harassment, intimidation, or other threatening disruptive behavior that occurs at the work site.” Nursing is one of the most dangerous jobs in the United States. In fact, nurses are assaulted more often than police officers and prison guards (Dvorak, 2017).

Anecdotally, hospital staff identified the increasing number of patients with behavioral health issues as a contributing factor, and facilities have linked the opioid epidemic and associated spike in overdose admissions as other factors (Burmahl, Morgan, & Hoppszallern, 2017). Among nurses, a dangerous perception exists that assault and threats from patients are “just part of the job” (Integrity Legal Nurse Consulting, 2017) and occur because of patients' conditions. Violence from patients and visitors is often associated with long wait times (especially in the ED), lack of information, crowding, receipt of bad news, stress, and poor coping skills (Hackethall, 2016; Casey, 2017). Nurses and other health care workers often do not report incidents of patient and/or visitor aggression and violence due to fear of retaliation from their employers.

Over the past year, the media has reported several incidents of workplace aggression against nurses. An Illinois prisoner influenced a corrections officer to remove his shackles to allow him to go to the bathroom, took the officer's gun, and sexually assaulted a nurse before being fatally shot by police (Ault, 2017). Another instance of workplace violence involved a Massachusetts ED nurse who was stabbed with a knife by a patient she was assisting (Massachusetts Nurses Association, 2017).

Several states have introduced legislation in response to this growing issue. In Massachusetts, state legislators are working to pass “Elise's Law” [S. 1374], which would require health care employers to “develop and implement individualized workplace violence prevention plans” and allow for a period of paid leave for health care provider victims of assault (Massachusetts Nurses Association, 2017; Mass. Legis., 2017). In Virginia, legislation was passed in 2017 that directs the Department of Health to convene stakeholders and develop model guidelines aimed at violence prevention and publication of penalties associated with perpetrators of violence in the ED and all other health care settings (Virginia Nurses Today, 2017).

### ***Effects of Violence on Health Care Employees and Employers***

Beyond the physical pain associated with being a victim of violence, psychological effects are experienced as well, including posttraumatic stress disorder. Upon return to work, it is important for employees to have employer support and a culture of safety to feel secure. From a financial perspective, employers incur the costs of workplace violence associated with the lost work days, increased turnover, the costs related to treatment of physical and psychological results, and the stress on other employees (Yarovitsky & Tabak, 2009).

### ***Approaches to Dealing With Health Care Workplace Violence***

The International Council of Nurses recently revised their workplace violence position statement to support development of “zero-tolerance” policies of violence in any form, including those associated with such issues as workplace bullying and lateral violence of nurses to each other (2017). Often underreported, bullying has been associated with a negative work environment that impacts job satisfaction, morale, and health and well-being of employees. These negative impacts affect patient safety and can lead to absenteeism and intention to leave one's job and the profession.

It is difficult to obtain accurate statistics on the prevalence, scope, and severity of workplace violence because it is underreported. Underreporting workplace violence, whether it be between health care workers or from patients and family members, hinders the de-



velopment and implementation of violence prevention programs and strategies. Hospitals are beginning to address the mindset that incidents of violent behavior are part of the job by taking a systems-based approach, rather than a reactive incident-specific approach, to its elimination (Stempniak, 2017). However, data are needed to understand the scope of workplace violence and to identify where to target resources to address and prevent it. For example, implementing an employee call center to report verbal and physical incidents is one approach to collect data and respond accordingly to reduce violence. By taking a data-based approach, hospitals and other workplace settings can move toward the prevention of violence.

Another health care system formed a multidisciplinary assault-reduction team that used assault data and created a Behavioral Emergency Response Team (Code BERT). Similar to Rapid Response Teams that react to patient emergencies to prevent cardiac arrest and other life-threatening situations, these multidisciplinary teams respond at any time to actual or potential violent situations (Stempniak, 2017).

Other strategies include staff training to recognize signs of escalating behavior and learning de-escalating techniques and other methods of violence prevention. Such training has seen more widespread adoption in the past 2 years as hospitals take a preventative response. Recognizing that uniformed security presence at the scene of an incident may aggravate matters, clinical staff are taught methods to potentially de-escalate on their own (Burmahl, Morgan, & Hoppszallern, 2017). Other promising practices include using scenario-based simulation training exercises (Allison, Macphee, & Noulett, 2017).

In addition, some hospitals are putting resources into technological prevention methods. Such strategies include metal detectors, surveillance systems, electronic lockdown systems, radio frequency tracking for equipment, and even biometric authentication for certain sensitive areas. These technological prevention methods aim to provide a safe environment for health care employees and patients (Burmahl, Morgan, & Hoppszallern, 2017).

Constant security staffing issues are part of the challenge in facility response to violence. Many health systems have reported an increase in incidents while their security budget has remained the same or decreased, possibly because little data exist that show increased security staff improves outcomes (Burmahl, Morgan, & Hoppszallern, 2017).

Professional organizations advocate that hospitals and other health care settings have “zero-tolerance” policies for workplace violence and assist in developing and implementing such policies. The American Nurses Association’s (ANA’s) position statement emphasizes the ethical, moral, and legal responsibility of health care employers to create a healthy and safe work environment for RNs and other health care team members, patients, families, and communities (ANA, 2015). AACN published its six Healthy Work Environment standards relating to skilled communication, true collaboration, effective decision making, appropriate staffing, meaningful recognition, and authentic leadership (Blake, 2016). The American Organization of Nurse Executives and the Emergency Nurses Association developed a list of eight guiding principles on mitigating workplace violence and recommended implementing health workplace safety assessments and de-escalation training techniques.

State and federal organizations and hospital accreditors also are addressing the epidemic of violence against nurses and other health care workers. The Office of Occupational Safety and Health Administration (OSHA) has guidelines for preventing workplace violence for health care and social service workers (2016) and recently announced plans to issue a regulation on violence to protect health care workers. The Joint Commission released an advisory for preventing violence and criminal events and recommended actions to identify risks for violence and to develop plans to reduce the risks. The guidelines also focused on improved staffing and establishing a “zero-tolerance” policy (The Joint Commission, 2014).

Several states have introduced new bills proposing to raise the punishment for harming a nurse; in 2018, Florida and Hawaii have such legislation pending (Fla. Legis., 2018; Hawaii Legis., 2018). OSHA has gathered public comment and is considering updating guidance to health care worker safety. The Centers for Disease Control and Prevention (CDC)/OSHA course, “Workplace Violence Prevention for Nurses,” is an applicable tool for educators and administrators (CDC, 2017a).

### **Cannabis as a Therapeutic Treatment**

An increasing cultural acceptance of cannabis prompted 31 states (including the District of Columbia), Guam, Puerto Rico, and all Canadian provinces/territories to legalize medical cannabis. An increasing proportion of these states have also decriminalized and legalized recreational cannabis use (National Conference of State Legislatures, 2017b). The surge of legislation has outpaced research, leaving nurses with a lack of evidence-based resources when caring for patients who use medical or recreational cannabis. Without experimental evidence that is scientifically rigorous, statistically reportable and based on patient populations, nurses will face increasing challenges about medical cannabis.

Schedule I substances are considered to have no accepted medical value and to present a high potential for abuse. Cannabis and its derivatives have been classified as Schedule I substances since the enactment of the Controlled Substance Act (1970). This Drug Enforcement Agency (DEA) classification not only prohibits practitioners from prescribing cannabis, it also prohibits most research using cannabis, except under rigorous oversight from the government.

In October 2009, the Obama Administration discouraged federal prosecution of people who distribute marijuana for medical purposes in accordance with state law (Department of Justice, Office of Public Affairs, 2009). Numerous federal bills have been introduced in recent years to reschedule marijuana to allow more research, but as of 2017, none have passed the House of Representatives or the Senate (Compassionate Access, Research Expansion, and Respect States Act of 2015; Regulate Marijuana Like Alcohol Act, 2015; Restoring Board Immunity Act, 2017; Ending Federal Marijuana Prohibition Act of 2017).

In 2016, congressional representatives called on the DEA to reschedule cannabis (Bernstein, 2016). The FDA conducted a scientific evaluation, medical evaluation, and scheduling recommendation in consultation with the National Institute on Drug Abuse in response to the congressional petitions. The DEA denied petitions to reschedule marijuana as a Schedule II drug or lower, stating that marijuana will remain a Schedule I controlled substance because the DEA considers it to have a high potential for abuse with no medical benefit (Rosenberg, 2016b). In their denial to reschedule, the DEA noted that marijuana does not meet the criteria for currently accepted medical use in treatment and that a lack of safety information exists for its use under medical supervision. However, the DEA also announced a policy change, which expanded the number of DEA registered marijuana manufacturers (Rosenberg, 2016a). This change should provide an increased supply of marijuana for FDA authorized research purposes. Despite this policy change, the DEA has yet to approve any application to become a licensed producer of cannabis for research (Joseph, 2017). Researchers hoping to study the medical effects of cannabis face a protracted wait time for plant material. This federal bottleneck stymies and effectively hinders new studies.

Despite these restrictions, high-quality clinical evidence has emerged establishing the efficacy of cannabis for certain therapeutic applications; however, its safety has not been fully established by large-scale, randomized clinical trials. (For an overview of what considerations go into evaluating new therapeutic agents see Pegler & Underhill, 2010.) Thus, the current evidence for the efficacy and safety of cannabis and cannabinoids has narrow application. For most of the qualifying conditions typically included in state medical cannabis programs, sufficient experimental evidence does not exist to reasonably demonstrate therapeutic efficacy (especially for long-term use), comparative efficacy to standard medications, dosage, tolerability, and safety (including the numerous strains and preparations available). Without additional large-scale clinical studies, cannabis remains a complementary and alternative medicine, a drug of last resort or salvage therapy. Many researchers and medical organizations hope future research will be less restricted and allow more scientific evidence to elucidate well-founded dosages, delivery routes, and indications.

Summarizing the specifics of each jurisdiction's medical cannabis legislation is difficult because of few commonalities between programs. Unique characteristics of a jurisdiction's program require the practitioner to review the individual jurisdiction's statute. The relevant statute can be located through the jurisdiction's Department of Health and medical marijuana program. These statutes include lists of the conditions that qualify an individual to participate in a jurisdiction's medical marijuana program and the process to become qualified.

These laws operate on the best available scientific information. Without sufficient information for clinical applications, many qualifying conditions were probably included because of promising preclinical research (including research on animals and isolated cellular/tissue samples), whereas others were probably included because of symptoms they share with better-studied conditions. A few broad qualifying conditions and symptoms, notably chronic pain, neuropathies, and nausea/vomiting, are the most researched and commonly associated with medical cannabis (Whiting et al., 2015).

Most registered medical marijuana patients cite chronic pain as the primary condition being treated; for example, in Arizona, chronic pain accounts for 81% of marijuana patients (Arizona Department of Health Services, 2016). In Colorado, 93% of patients report pain, regardless of whether it is the primary condition being treated (Colorado Department of Public Health & Environment, 2016).

Legislation regarding cannabis is an ever-evolving process. The cannabis legislation summary in Figure 6 is current as of May 2017.



FIGURE 6

**Cannabis Legislation**

Type of Provision	States
Medical Marijuana Program	AK, AR, AZ, CA, CO, CT, DC, DE, FL, HI, IL, LA*, MA, MD, ME, MI, MN, MT, ND, NH, NJ, NM, NV, NY, OH, OR, PA, RI, VT, WA, WV
Allow cannabidiol (CBD) products for intractable seizures (many are restricted to clinical studies)	AL, GA, IA, KY, MO, MS, NC, OK, SC, TN, TX, UT, WI, WY
Allow APRNs to certify a qualifying condition referred to in state medical cannabis statute	HI, ME, MA, MN, NH, NY, VT, WA
No cannabis statutes	ID, IN, KS, NE, SD, VA
Recreational use of cannabis	AK, CA (passed, but start date is 2018), CO, MA, ME (passed, but start date is 2018), NV (passed, but start date is unknown), OR, WA

\* Louisiana lacks the necessary infrastructure to enact their medical marijuana program and the state's previous statutory language failed to grant necessary protections to physicians and users. Legislators have yet to decide who will be the legal cultivators for the state and how to regulate pharmacies that will distribute medical cannabis.

Fifty-seven qualifying conditions are included across the different jurisdiction laws; however, the most common qualifying conditions are:

- Amyotrophic lateral sclerosis (ALS)
- Alzheimer disease
- Arthritis
- Cachexia
- Cancer
- Crohn disease and other irritable bowel syndromes
- Epilepsy/seizures
- Glaucoma
- Hepatitis C
- HIV/AIDS
- Nausea
- Neuropathies
- Pain
- Parkinson disease
- Persistent muscle spasms (including multiple sclerosis)
- Posttraumatic stress disorder
- Sickle cell disease
- Terminal illness

Many comprehensive reports and reviews of the current medical cannabis literature have been published. The National Academy of Sciences (National Academies of Sciences, Engineering, and Medicine, 2017a) and the World Health Organization (Madras, 2015) published the two most prominent and thorough reports. The National Academy of Sciences concluded that conclusive or substantial evidence exists to support that cannabis or cannabinoids are effective for the treatment of chronic pain, chemotherapy-induced nausea and vomiting, and spasticity due to multiple sclerosis. Additionally, moderate evidence exists to conclude that cannabis is effective for “improving short-term sleep outcomes in individuals with sleep disturbance associated with obstructive sleep apnea syndrome, fibromyalgia, chronic pain, and multiple sclerosis” (National Academies of Sciences, Engineering, and Medicine, 2017a).

For nurses and nurse regulators, the current state of cannabis in the nation provides unique challenges. The U.S. population is becoming more accepting of cannabis and its use as medicine, but historical stigmatization is still prevalent (Bottorff et al., 2013; Satterlund, Lee & Moore, 2015; Swift, 2016). The groundswell of popular opinion of cannabis as an effective medicine is supported by observational reports, word of mouth, and a few, small reliable clinical studies. The inherent risk to patients in this climate is an optimistic belief in effects that may not exist, especially when standard medications are bypassed altogether in the pursuit of what cannabis may treat or cure (Pergam et al., 2017). A recent survey suggests a substantial number of marijuana dispensary staff are giving medical advice without formal training (Haug, Kieschnick, Sottile, Babson, Vandrey, & Bonn-Miller, 2016). Lack of knowledge is not isolated to patients and dispensary staff. A recent NCSBN survey of U.S. nursing colleges revealed that very few schools dedicate much time to

cannabis except as a substance of abuse (NCSBN unpublished findings). This survey also showed that schools tend to follow local statutes. If a jurisdiction does not have a medical marijuana program, the nursing programs do not teach the therapeutic effects of cannabis.

Policy and legal issues confound this uncertain mixture of medical fact and subjective reporting. NCSBN's survey of state BONs demonstrated that state boards are currently examining their policies for out-of-state use of cannabis by nurses in jurisdictions where it is legal (NCSBN unpublished findings). Nurses who use recreational cannabis while on vacation may test positive days or weeks after their last dose. How boards and facilities respond to a positive screen at work and/or a confession of out-of-state use will be a growing issue in the coming years. Outside of recreational use, nurses may seek cannabis as a therapeutic treatment in jurisdictions where it is legal. Most facilities maintain a zero-tolerance policy regarding positive drug use, but within the past 2 years, this question of legal use has caused difficulties for employers. One prominent court case (*Barbuto v. Advantage Sales & Mktg*, 2017) ruled that outside of federal employment, Massachusetts employers are required to accommodate the offsite use of medical marijuana for qualifying conditions of the Americans with Disabilities Act. The court allowed that safety-sensitive positions and on-site use and/or impairment are grounds for rejecting a proposed accommodation. Nursing regulators will need to contend with what constitutes undue hardship for various roles and positions for the possible accommodation of medical cannabis use among practicing nurses.

Finally, nurses must become knowledgeable of their jurisdiction's rules and statutes, as well as with their facilities' policies. It is increasingly likely nurses will encounter patients taking cannabis as a therapeutic agent. Depending on the jurisdiction and setting, this scenario could result in either having the cannabis removed from the health care facility premises by police or having the nurse assist the patient administering the cannabis. In all cases, it is paramount the nurse becomes knowledgeable about cannabis as a therapeutic treatment, about local laws and rules, and about how to practice with an ethical groundwork.

### **The Opioid Epidemic**

A major objective of the Cures Act is to help states identify resources and methods to address opioid abuse. One billion dollars in funding has been designated to states for the following: (a) improving prescription monitoring programs, (b) conducting research, (c) developing prevention and treatment programs, and (d) providing prescriber and consumer education (Clifford, 2017).

In 2017, widespread opioid use, addiction, and related consequences remained a major focus in the United States. National reporting of important data related to opioid use was delivered, and several new guidelines and strategies were published to help end the opioid epidemic. Many initiatives in 2017 related to proper prescribing for acute care opioids, while others focused on the treatment of individuals with substance use disorder. Government and insurance initiatives focused on limiting the availability of prescription opioids. Litigation against opioid manufacturers and a proposed tax were considered firsts in the fight to end the opioid epidemic. An important statement by the American College of Physicians (ACP) identified substance use disorder as a treatable chronic medical condition (Crowley, Kirschner, Dunn, & Borstein, 2017).

Canada has also been proactive about combatting opioids with several provinces noting a spike in opioid deaths, particularly related to Fentanyl. To reverse the trend, Ontario will invest over \$200 million in harm reduction between 2017-2019, with much of that funding going toward treatment, counselling and mental health services (Howlett & Giovannetti, 2017).

The many reports, data, guidelines and other resources create a spider web of information for the practitioner. NCSBN gathered current information regarding opioid prescribing guidelines, continuing education, and federal, state and international resources into an opioid toolkit housed on the NCSBN website (NCSBN, 2017d). As new resources become available, the website will be updated. Detailed below are some of the important 2017 initiatives and developments in the opioid epidemic.

### **The Scope of the Opioid Epidemic**

Released in 2017, the 2016 National Survey on Drug Use and Health (SAMHSA, 2017a) found prescription and illicit opioid use continued to be an unabated problem in the United States with 11.8 million people having misused opioids in 2016 and 11.5 million of those having misused prescription pain relievers. Data from the CDC Report (CDC, 2017b) show that although the number of opioid prescriptions written by health care providers decreased through 2015, opioid prescribing is still too high and inconsistent across the United States. According to a new AHRQ report (Weiss, Bailey, O'Malley, Barrett, Elixhauser, & Steiner, 2017), there was a sharp increase in hospitalizations involving opioids, with 1.27 million ED visits or inpatient stays for opioid related issues in 2014. CMS' online Opioid Prescribing Mapping Tool (CMS, 2017b) provides U.S. geographic comparisons at the state, county and ZIP code levels of de-identified Medicare Part D opioid prescription claims—prescriptions written and then submitted to be filled. This tool assists in understanding how this critical issue impacts both communities and individuals nationwide.

### **Opioid Policy Statements and Initiatives**

The ACP's policy statement on the prevention and management of substance use disorder as a treatable chronic medical condition included the following recommendations: (a) expand naloxone access for overdose prevention to opioid users, law enforcement, and emergency medical personnel; (b) improve access to medical-assisted treatment, and; (c) lift barriers that limit access to medications

for treating opioid use disorder, such as methadone, buprenorphine, and naltrexone (Crowley, Kirshner, Dunn, & Bornstein, 2017). Furthermore, the ACP emphasizes addressing substance abuse stigma in the general population and medical community, recommends treatment through individual and public health interventions, and calls for health insurance coverage of mental health conditions. The ACP also recommends expanding the professional workforce who treat patients with substance abuse and embedding training for such treatment throughout medical education.

The National Academy for State Health Policy's brief discusses two evidence-based interventions: (a) screening, brief intervention, and referral to treatment and (b) medication-assisted treatment. Both can be implemented in primary care settings to combat the opioid epidemic. The brief also explores key state policies designed to support primary care providers in combatting the nation's opioid epidemic (Townley & Dorr, 2017).

The National Academies of Sciences, Engineering and Medicine's report (2017b) calls on regulators to overhaul opioid policies, weigh the societal impacts of opioids when approving or recalling drugs, invest in research to better understand the nature of pain, and develop nonaddictive alternatives. Several other agencies created or updated their own opioid policy guidelines. The Federation of State Medical Boards adopted updated guidelines (2017) for chronic use of opioid analgesics. The guidelines include updated criteria for use by state medical boards in areas such as patient assessments, evaluations, and ongoing monitoring, use of treatment agreements, decision to initiate and discontinue opioid therapy, and prescribing of naloxone and methadone. The American Society of Interventional Pain Physicians created guidelines for the Responsible, Safe, and Effective Prescription of Opioids for Chronic Non-Cancer Pain (Manchikanti et al., 2017). The American College of Obstetricians and Gynecologists developed a committee opinion on Opioid Use and Opioid Use Disorder in Pregnancy (2017). The VA and the U.S. Department of Defense published an updated clinical practice guideline on opioids for chronic pain (U.S. Department of Health & Human Services, National Institutes of Health, 2017). These guideline recommendations warn against initiating long-term treatment with opioids for adult patients with chronic pain and suggest nonpharmacologic or nonopioid treatments.

The Office of Women's Health conducted national and regional meetings to learn more about opioid use and misuse in women. This work is reflected in a white paper that identifies themes regarding emerging knowledge about the many factors that affect a woman's path to opioid use and misuse, as well as implications for policy and practice (Office of Women's Health, 2017). The themes include research on the unique needs of women, provider tools and education, access to gender responsive support, expanded access to naloxone, opioid dependence as a chronic disorder, and financing for prevention and treatment.

One provision of the 2016 Comprehensive Addiction and Recovery Act (CARA) expanded access to substance use treatment services and overdose reversal medications, including services from prevention to medication-assisted treatment and recovery support. Both CNPs and physician assistants have the privilege to prescribe buprenorphine in office-based settings via a prescribing waiver until October 1, 2021 (CARA, 2016). To be eligible for the CARA prescribing waiver, CNPs and physician assistants must complete 24 hours of training. In 2017, the Substance Abuse and Mental Health Service Administration (SAMHSA) announced its waiver process for NPs who have completed the 24 hours of required education for medication-assisted treatment of substance abuse (SAMHSA, 2017b). NPs and physician assistants may take the 8-hour DATA-waiver course for treatment of opioid use disorder via a free portal on the SAMHSA website.

Prescription drug monitoring programs (PDMP) and electronic prescribing were found to be useful tools in addressing the opioid epidemic. According to a Surescripts report (2017), a 256% increase in electronic prescribing of controlled substances occurred from 2015 to 2016 as prescribers and pharmacies embraced technology, a trend that assists in addressing the opioid abuse epidemic by decreasing fraud and diversion. A study from the National Survey of Drug Use and Health (Ali, Dowd, Classen, Mutter, & Novak, 2017) found that in states requiring practitioners to consult a PDMP database before writing an opioid prescription, the odds of two or more practitioners prescribing pain relievers for nonmedical purposes to a single patient were reduced by 80%.

Insurers are also participating in opioid risk management programs by closely scrutinizing claims to make sure patients are receiving opioids in the right amount, at the right time, and from the right place (Japsen, 2017). By reviewing dosages against the CDC recommended dosage, one insurer saw an 82% decrease in a specific opioid prescription beyond the CDC guidelines since the employment of the opioid risk management program. Another insurer said its health plans were working to limit coverage and access to new prescriptions for short-acting opioids to 7 days.

Recently, CVS Health announced it will limit the supply of opioids dispensed for certain acute prescriptions to 7 days for patients who are new to therapy, becoming the first national retail chain to restrict the amount of pain pills health care practitioners can prescribe to patients (Cision PR Newswire, 2017). The opioid supply restriction is part of an enhanced opioid utilization management approach initiative that also includes limiting the daily dosage of opioids dispensed based on the strength of the opioid, and requiring the use of immediate-release formulations of opioids before extended-release opioids are dispensed.

## Opioid Regulation and Litigation

Many states passed a variety of legislation attempting to combat the opioid epidemic. These bills often provide greater flexibility in the number of health care professionals allowed to prescribe and dispense opioid antagonists, which requires opioid training in the form of continuing education and requiring the use of PDMPs. Louisiana's Senate Bill 55 (La. Legis., 2017) provides a useful example, as it requires any person who engages in research, manufacture, distribution, possession, prescribing, or dispensing of "controlled dangerous substances" to obtain a special license from the Board of Pharmacy. The bill also requires the use of the Prescription Monitoring Program in conjunction with the special license, as well as 3 hours of continuing education as a prerequisite to renew a license with prescriptive authority. West Virginia's House Bill 2804 (W. Va. Legis., 2017) requires continuing education hours regarding opioids as well, specifically on drug diversion, best practices for prescribing controlled substances, and training on the prescription and administration of opioid antagonists. These requirements apply for all new licensees or license renewal for all health care practitioners who prescribe and dispense controlled substances. Colorado chose to take an innovative approach to address opioid misuse through the creation of a pilot program focused on specific areas within the state with high levels of opioid addiction (Colo. Legis., 2017). The program awards grants to improve access to medication-assisted addiction treatment. State legislatures are clearly concerned with the rise of opioid addiction and misuse, but since the bills are recently enacted, their effects remain to be seen.

Several lawsuits, penalties, and actions were brought against opioid manufacturers in 2017. Ohio became the first state to sue an opioid manufacturer when the Ohio Attorney General filed a lawsuit against five prescription opioid manufacturers alleging the drug companies engaged in fraudulent marketing regarding the risks and benefits of prescription opioids (Ohio Attorney General, 2017). California became the first state to propose a tax on prescription opioids in 2017. The proposed bill would impose a one-cent-per-milligram tax on prescription opioids sold in California. The tax would fund county drug addiction prevention, treatment, and rehabilitation programs in California (Calif. Legis., 2017).

Also in 2017, federal agencies announced initiatives to end the opioid epidemic. For the first time, the FDA took steps to remove an opioid pain medication from sale because of public health consequences. The FDA requested the removal of Endo Pharmaceuticals' opioid pain medication, reformulated Opana ER, from the market based on a review that found a substantial shift in the route of Opana ER abuse from nasal to injection following the drug's reformulation (FDA, 2017a). Additionally, the District of Columbia Circuit Court of Appeals ruled to allow the DEA to revoke prescription medication supplier Masters Pharmaceutical Inc.'s ability to sell controlled substances after the supplier repeatedly failed to implement safeguards intended to catch suspicious orders (*Masters Pharmaceutical, Inc. v. DEA*, 2017). The DEA also proposed a 20% reduction in the manufacture of certain commonly prescribed opioid painkillers and other controlled substances for 2018 to combat the opioid epidemic (Department of Justice & Drug Enforcement Administration, 2017a).

The FDA also formed a steering committee to examine additional regulatory and policy actions to address the opioid crisis (2017b). The committee was tasked with evaluating ways to reduce the number of new cases of addiction. In addition, the U.S. Department of Justice launched the Opioid Fraud and Abuse Detection Unit, a pilot program that will use data to identify and prosecute individuals contributing to the prescription opioid epidemic (Department of Justice & Office of Public Affairs, 2017). The program funds 12 Assistant United State Attorneys to investigate and prosecute health care fraud related to prescription opioids, including pill mill schemes and pharmacies that unlawfully divert or dispense prescription opioids.

President Trump signed an executive order establishing the Commission on Combating Drug Addiction and the Opioid Crisis (The White House, 2017). The White House Commission was tasked with studying ways to combat and treat drug abuse, addiction, and the opioid crisis. The commission released an interim report in August 2017 recommending that President Trump declare a national emergency to deal with the opioid epidemic, stating it would force Congress to focus on funding and further empower the executive branch to deal with deaths related to the opioid epidemic. Following the White House Commission's recommendation, President Trump declared the opioid crisis a national emergency, but paperwork formally declaring an emergency has not been issued and no new policies have been announced (U.S. Senate, 2017).

## The Role of Nursing in Helping End the Opioid Epidemic

Since many factors contributed to the cause of the opioid epidemic, considerable effort is needed to reduce the current addiction rate and prevent future addiction. Epidemic awareness is growing, and many entities are working to identify and treat those with an addiction, as well as to prevent further opioid addiction. How can nursing and nursing regulators contribute to end this epidemic?

Education for, and adhering to, evidence-based opioid prescribing guidelines for APRN opioid prescribers can be the first step. With an ever-growing number of guidelines and resources, BONs can:

- Assist APRNs by promoting evidence-based guidelines and resources. For example, see NCSBN, (2017e); New Hampshire BON (2017); Minnesota BON (2017).
- Create BON evidence-based guidelines. For example, see Nevada State BON (2017); Wisconsin BON (2017).
- Participate in creating or promoting state-based initiatives to create guidelines. For example, see Ohio Mental Health Addiction Services (2017a); Arizona Department of Health Services (2017).



BONs can also participate in state government efforts to identify next steps and solutions to the opioid epidemic. For example, the Summit on Reducing the Supply of Opioids in Washington (Washington State Office of the Attorney General, June 2017); the Ohio Governor's Cabinet Opiate Action Team (Ohio Mental Health Addiction Services, 2017b); or the Minnesota Opioid Prescribing Work Group (Minnesota Department of Human Services, 2017).

Other nursing regulation efforts can also include promotion of the following:

- Ongoing education for nurses about the opioid epidemic via newsletter, website, or continuing education
- Prescription Drug Take-Back Days (U.S. Department of Justice, Drug Enforcement Administration, 2017b)
- Use of prescription drug monitoring programs (U.S. Department of Justice, Drug Enforcement Administration, 2016)
- Use of controlled substance disposal safe practices (U.S. Department of Justice, Drug Enforcement Administration, 2017c)
- Ongoing education to identify substance use disorder in patients and nursing professionals

## 2018 Regulation Update

### ***North Carolina Board of Dental Examiners v. Federal Trade Commission Decision: Not All Licenses Are Created Equal***

Nationally, occupational licensing has an ominous cloud looming over it. The Supreme Court's decision in *North Carolina State Board of Dental Examiners v. Federal Trade Commission* brought the issue to the limelight, and from the White House to state legislatures, lawmakers are focusing on when and if occupational licensing is necessary at all (Cottle, 2017). Occupational licensing has grown exponentially over the past several decades (Flanders & Roth, 2017). While nearly one in four workers are required to be licensed today, only one in 20 were required to be licensed in 1950 (Flanders & Roth, 2017). National and state lawmakers are questioning whether licensing laws are necessary and what impact, negative or positive, intended or unintended, they could have. Blurred by puzzling anecdotes that call into question licensure requirements for hair braiders and locksmiths, all professions, including health care professions, have been dragged into the ring despite clear differences (Cottle, 2017).

"If other states have recognized that there's no need for a license, then that's a license we'd ought to think seriously about eliminating ourselves because it shows that the public health and safety will be just fine," said Paul Avelar, attorney for the Institute for Justice (Goldwater Institute, 2017). If looking to the number of states that license a profession as a means to determine whether regulatory schemes are enacted to protect the public, then regulation of health care professionals is certainly necessary to protect the public health and safety. Nurses are licensed across all 50 states and U.S. territories (Adventure of the American Mind, 2007). "The purpose of a professional license is to protect the public from harm by setting minimal qualifications and competencies for safe entry-level practitioners," (NCSBN, 2011). With that purpose at the forefront, "nursing is regulated because it is one of the health professions that poses a risk of harm to the public if practiced by someone who is unprepared and/or incompetent" (NCSBN, 2011). Licensure, by definition, is a restriction and "imposition of conditions limiting the person's freedom to carry on an activity, profession, occupation, or business of choice," according to Teitelbaum and Wilensky (2009), however, "justification for imposing such a restriction is to protect the public health, safety, and welfare."

Studies vary on how large a restriction licensure places on a profession. In a new article entitled *The New Closed Shop? The Economic and Structural Effects of Occupational Licensure*, researchers found "contrary to established wisdom, licensure does not limit competition, nor does it increase wages" (Redbird, 2017). In fact, imposition of licensure "creates a set of institutional mechanisms that enhance entry into the occupation, particularly for historically disadvantaged groups, while simultaneously stagnating quality" (Redbird, 2017). Wage differences, however, likely relate to the skill level involved in the profession, with higher skilled occupations tending to receive higher wages (Redbird, 2017). In addition, the study found licensure often provides a path to a profession that may make the market easier for individuals to enter, rather than more difficult (Redbird, 2017). As advocates at national and state levels look to dismantle existing licensure mechanisms, public health and safety should remain at the vanguard of the debate and new evidence should be considered when evaluating gains and losses of imposing licensure.

### ***Federal Legislation Related to NC Dental***

After several hearings in 2016 surrounding the U.S. Supreme Court's 2015 decision, the Restoring Board Immunity Act was filed in 2017 (Restoring Board Immunity Act, 2017). The Restoring Board Immunity Act's goal is to "incentivize states to make necessary and long-overdue changes to their occupational licensing regimes" (Issa & Lee, 2017). According to the sponsors, the resolution presents states with two options for receiving antitrust immunity: (a) create direct state oversight over licensing boards, or (b) develop a method for citizens to challenge the necessity of regulatory board regulations for the public health and welfare (Issa & Lee, 2017). Under the first option, states would need to establish an Office of Supervision of Occupational Boards to "review the actions of occupational licensing boards to ensure compliance" with policies including reviewing and approving or disapproving proposed regulations (Restoring Board Immunity Act, 2017). The creation of this office is the same as required by the American Legislative Exchange Council's model

Occupational Board Reform Act, which several states have adopted into law (American Legislative Exchange Council, 2015). The second option involves judicial review (Restoring Board Immunity Act, 2017). The bill calls on states to create a cause of action for an individual against a regulatory board's decision, allowing an individual to "bring an action for injunctive relief against enforcement of an occupational licensing law of the State," (Restoring Board Immunity Act, 2017). If the state adopts either of these options, the bill would create a "limited antitrust exemption" for state licensing boards (Restoring Board Immunity Act, 2017).

### **Executive Orders Related to NC Dental**

State executive branches across the United States have continued to act in light of the Supreme Court's decision in *North Carolina State Board of Dental Examiners v. Federal Trade Commission* (2015). Governors in Arizona and Missouri used executive orders to act as a check on regulatory bodies in their states.

Arizona's Executive Order 2017-03 directed health care regulatory boards to report an evaluation of their licensure process and restraints placed on entry into the profession to the governor (Ariz. Exec. Order No. 2017-03, 2017). Notably, the report must include the following: (a) requirements for licensure including training, continuing education, and initial licensure and renewal fees, (b) whether each requirement is higher than the national average for the same requirement, (c) any type of criminal bar to issuing a license, and (d) issuance statistics including average timeframe for approval of licensure. Removing barriers for Arizonans who wish to enter the job market is one reason for the order (Ariz. Exec. Order No. 2017-03, 2017).

Missouri's Executive Order 2017-03 directed all agencies to cease rulemaking for one and a half months (Mo. Exec. Order No. 2017-03, 2017). Under the order, each agency is required to undergo a review of their regulations and, in doing so, provide an opportunity for public comment, hold public hearings, and look to stakeholders and other interested parties for advice (Mo. Exec. Order No. 2017-03, 2017). The review is overseen by an agency-designated supervisor and culminates in a report to the governor detailing findings and subsequent steps, if needed (Mo. Exec. Order No. 2017-03, 2017). The report should include whether the regulation is necessary for public health and welfare, a cost-benefit analysis, a process to measure the effectiveness of the regulation, and a discussion that less restrictive regulations were considered but not found desirable (Mo. Exec. Order No. 2017-03, 2017).

### **State Legislation Related to NC Dental**

A number of states have introduced legislation over the past several years in response to the Supreme Court decision in *North Carolina Board of Dental Examiners v. Federal Trade Commission* (2015). The approaches taken to address state boards' potential antitrust liability have been extremely varied. Many states attempted to pass legislation emphasizing the active supervision aspect of the case, or based on model acts focused on a larger picture of overall deregulation. Others have chosen a more indirect approach (Standley, 2017).

Many states introduced legislation to establish clearer processes for active state supervision of occupational licensing boards; however, because of the lack of established standards from *NC Dental*, this additional level of oversight has taken a variety of different forms (Citizen Advocacy Center, 2015). A popular legislative approach has been to grant authority to review potentially anticompetitive board decisions to the head of the department or division that oversees occupational licensing boards (Standley, 2017). For example, in Senate Bill 15 (Conn. Public Act 16-185, 2016), Connecticut granted the power to review board decisions to the commissioner of the department of consumer protection. Other states have attempted to grant reviewing power to the legislature, the office of the governor, or the attorney general. Bills such as these grant the authority to review, approve, or reject any board decision considered to have an anticompetitive impact. In most cases, this review process only applies to boards with a majority of members who are market participants, and board decisions are not considered final until such a review process has taken place and a final directive has been issued by the supervising authority.

Other states have focused on the larger issue of deregulation through employing the Goldwater Institute's Right to Earn a Living Act (Coleman, 2017) and the American Legislative Exchange Council's (ALEC) Occupational Licensing Board Reform Act (2015). Both model acts implement a least restrictive means test intended to limit agency regulations to those "demonstrated to be necessary to specifically fulfill a public health, safety, or welfare concern" (Coleman, 2017). Arizona's Senate Bill 1437 (Ariz. Legis., 2017) enacted Goldwater's Right to Earn a Living Act in 2017. In addition to restricting board regulations, the act also allows regulations to be legally challenged by individuals harmed by such regulations. In 2016, Iowa attempted to pass ALEC's model legislation through HF 2426 and SF 2167. Both bills failed to pass but would have created an Office of Supervision of Occupational Boards and required boards to use the least restrictive regulation necessary to protect consumers (Iowa Legis., 2016a; Iowa Legis., 2016b). Illinois, Mississippi, Nebraska, and Virginia all attempted to create similar offices or divisions of supervision of occupational boards, but only Mississippi was successful.

Although many states introduced similar bills implementing the active supervision doctrine, others took a more unique or indirect approach. Alabama, for example, had several outlier bills attempting to address *NC Dental*. In 2016, Senate Bill 104 was enacted and declared the Alabama Board of Medical Examiners and the Medical Licensure Commission immune from liability under antitrust laws. This bill also said the board was in the position of prioritizing patient safety and wellness, which may sometimes be contradictory to



antitrust laws (Ala. Legis., 2016). Alabama's Senate Bill 132 in 2017 attempted to provide the same level of protection to the Alabama BON, but it failed to pass the House (Ala. Legis., 2017). Other states used *NC Dental* as a method to reorganize the structure of regulatory boards. Oklahoma's Senate Bill 1540 (2016) failed to pass but would have created the State Department of Health Professional Licensure and moved 17 health licensing boards under the department's supervision to provide additional state oversight. A similar bill in Arizona, House Bill 2501 (Ariz. Legis., 2016), would have brought several health licensing boards under the authority of the Department of Health. Although House Bill 2501 ultimately failed to pass, it would have created a supervisory role within the department to oversee potentially anticompetitive decisions (Ariz. Legis., 2016).

Sunset reviews are another example of an indirect approach to address the issues posed by *NC Dental*. Ohio's House Bill 289 in 2017 would require legislative standing committees to review approximately 20% of all occupational licensing boards each year, with all boards reviewed every 5 years. The standing committee would have the authority to determine the sunsets of each board, and the director of the Legislative Service Commission would be required to review proposed legislation for its potential anticompetitive impact (Ohio Legis., 2017). Utah enacted similar legislation, Senate Bill 212, in 2017 to ensure every licensed occupation is reviewed every decade for its level of market restriction (Utah Legis., 2017).

As most state legislatures commence a new year's session, regulators should keep an eye out for any proposed changes impacting occupational licensing boards in their state. Along with an eye on state lawmakers, look for the debate at the national level to continue as well. The Federal Trade Commission recently assembled an Economic Liberty Taskforce to raise awareness of the current state of occupational licensing and consider reforms (Federal Trade Commission, 2017).

### Testing and Legal Issues Surrounding Licensure Examinations

Licensure and certification examination administrators have been pervasively reassessing traditional multiple-choice examinations delivered in brick-and-mortar testing centers. Examination administrators are exploring the use of alternative assessment tools that better evaluate clinical judgment rather than simple recall of knowledge. These alternative assessments include the use of new item types and item scoring, including self-assessment examinations with test, feedback, simulation, and study and retest features. In addition, examination administrators are piloting the use of alternative assessment delivery such as Web-based tests with remote proctoring. Examination developers are also beginning to explore alternatives to one-time, end-of-training assessments that include preliminary competency testing during training, postlicensure/certification periodic assessments of continued clinical competency and acquisition, and use of new knowledges of best practices. The perceived advantages of these alternatives include:

- Improved evaluation of ability to practice safely and effectively
- Increased support/incentive for lifelong learning
- Decreased concern over item security, exposure, and theft of examination content, as where preknowledge of the item has less impact on performance on the new item types
- Improved management of time and money

The administration of state licensure examinations must adhere to the constitutional requirements that any licensure examination bear a rational relationship to fitness for professional practice and may not discriminate against a protected group in its development or administration. Additionally, the administration of state licensure examinations must provide reasonable accommodations under Titles II and III of the Americans with Disabilities Act. In the case of the NCLEX-RN and NCLEX-PN, state BONs are responsible for determining whether a specific accommodation may be granted. Obligations to grant accommodation sought by a candidate have grown more stringent subsequent to revisions to the Americans with Disabilities Act and the court's adoption of the standard that accommodations need to be granted "to best ensure that the results accurately reflect the individual's KSA [knowledge, skills, and abilities] which the test is designed to measure rather than reflecting the effects of an individuals' disabilities unrelated to the measured KSA" (*Doe v. Law School Admission Counsel, Inc.*, 2017). Of concern to NCSBN, some individuals have requested the NCLEX be administered in a non-CAT format to permit review and revision of past questions.

Additionally, the increased emphasis on legal challenges to state licensure under the antitrust laws may lead to passing standard challenges, particularly how a passing standard is set by licensing boards whose members are active practitioners. No such lawsuits have been brought to date, but the potential remains for the examination's effect on new professionals entering the service market to be called into question.

### The Future of Health Care Cybersecurity

With BON processes becoming increasingly paperless, and sensitive information such as licensure, discipline, and criminal background check information being housed in digitized databases, BONs should take note of recent cyberattacks on health care systems. They should also be aware of the potential damage such a breach can cause. It is vital that regulatory bodies take steps to protect the private data of their licensees and, ultimately, the public.

## Authentication

Authentication is the process of identifying an individual before accessing a system and is one of many components in a security architecture designed to prevent unauthorized access to information.

The Payment Card Industry Data Security Standard (PCI DSS), the security standard for all organizations that handle branded credit cards, defines three authentication methods (PCI Security Standards Council, 2016):

- Something you know (such as a password)
- Something you have (such as a token device)
- Something you are (such as biometrics like fingerprints or facial recognition)

The traditional username and password method with which most people are familiar is known as single-factor authentication (SFA) because it requires only one of the three authentication methods. Traditional password guidelines indicate that passwords must be unique, complicated, use a variety of characters, and be changed frequently (Raphelson, 2017). The result was passwords that were very difficult for users to remember and easy for hackers to guess. The National Institute of Standards and Technology (2017) recently revised its password guidelines and now recommends passwords be much longer, much easier to remember, and require less frequent change. For example, it is recommended that passwords consist of a string of several individual words. The focus has shifted away from how users are composing passwords to requiring systems to use strong cryptographic methods for storing passwords.

It is widely acknowledged that SFA has flaws. According to a 2016 Ponemon Institute survey of information technology professionals, 75% of respondents indicated that a SFA approach is no longer effective (Ponemon Institute, 2017). Verizon's 2017 Data Breach Incident Report states that 81% of hacking-related breaches leveraged either stolen and/or weak passwords (Verizon Enterprise, 2017). One method used to overcome SFA shortcomings is multifactor authentication (MFA), which requires the user to present two or more authentication methods (PCI Security Standards Council, 2016). For example, a system may first require a username and a password to authenticate (something you know). The system then prompts the user to enter a one-time code sent to his or her smartphone (something you have) to complete the authentication process.

MFA adoption is expanding. According to a 2017 publication by security company RSA, 52% of U.S. adults have used MFA (RSA Security, 2017). As of January 2018, the PCI DSS requires MFA for personnel with administrative access to cardholder data (PCI Security Standards Council, 2016). MFA schemes continue to get more sophisticated. Security firm Ping Identity advocates using contextual MFA, which is the use of signals such as hardware and location to enhance authentication security (Ping Identity, 2017). RSA points to smartphones as a method of extending MFA as smartphones are ubiquitous and have many built-in security features such as secure data storage and biometrics (RSA Security, 2017).

Biometrics, such as fingerprints or facial recognition, may be tomorrow's answer to today's authentication problems. As RSA states, "its benefits are evident: a unique biological or behavioral trait, nothing extra to carry or remember, and more individual accountability" (RSA Security, 2017). Google Android, Apple iOS, and Microsoft Windows devices all have biometric capabilities. Microsoft's Windows Hello technology is also opening possibilities for the enterprise; however, biometric authentication has yet to reach maturity. As noted by RSA, 15% of users have reported experiencing problems with fingerprint identification systems (RSA Security, 2017).

Regardless of the authentication method, RSA states "users' frustration with passwords has reached epic levels" (RSA Security, 2017). This frustration has driven many system providers to adopt single sign-on (SSO) solutions. Gartner defines SSO as a system that "provides the capability to authenticate once, and be subsequently and automatically authenticated when accessing various target systems" (Gartner IT, 2017).

In the consumer market, social login (using credentials from social media sites such as Facebook, Twitter, and Google+) has become dominant. According to analysis by identity platform provider LoginRadius, 88% of their users choose social login over a conventional e-mail-based username and password (LoginRadius, 2016). However, RSA indicates that at the corporate level, organizations tend to shy away from social login and focus on the security and transparency of their SSO solutions instead (RSA Security, 2017).

## Encryption

One of the most common ways to protect data is through encryption, and enterprise encryption strategies are becoming increasingly prevalent. According to a 2016 survey study by the Ponemon Institute, 38% of respondents indicated that they had no encryption strategy in 2005. In 2015, only 15% of respondents indicated they had no encryption strategy (Ponemon Institute, 2016).

The biggest driver for implementing encryption is compliance. Sixty-one percent of respondents to the Ponemon survey stated they were using encryption to comply with external privacy or data security regulations and requirements (Ponemon Institute, 2016). The most significant challenge for organizations is deciding what needs to be encrypted. Of Ponemon survey respondents, 57% indicated that discovering where sensitive data resides in the organization was their biggest challenge (Ponemon Institute, 2016).

Most encryption technologies are deployed to databases and internet communications. According to Ponemon, 87% of respondents have at least partially implemented database encryption and have at least partially implemented encryption for internet communications (Ponemon Institute, 2016).

Database encryption typically takes two forms: transparent data encryption and column-level encryption. Transparent data encryption, the type of encryption used by most database management companies, encrypts the database files on the server and, consequently, on any backup media (Sung, 2008). The database files and backup files are rendered useless without the encryption key. Column-level encryption stores data elements in an encrypted format. These data elements can only be decrypted when a key, password, or other secret is provided (IBM Knowledge Center, n.d.).

The Hypertext Transfer Protocol Secure (HTTPS) and the Secure Shell File Transfer Protocol (SFTP) are both examples of secure internet communication protocols. HTTPS is the secure version of Hypertext Transfer Protocol, or HTTP, and uses cryptographic protocols, such as Secure Sockets Layer (SSL) or Transport Layer Security (TLS), to encrypt and decrypt webpage requests, as well as the pages that are returned by the Web server. SFTP is the secure version of File Transfer Protocol (FTP) and uses a secure channel with SSL or TLS for secure communications. HTTPS and SFTP are both used to protect against eavesdropping and man-in-the-middle attacks by encrypting communications. In recent years, exploits have been released that target SSL and early versions of TLS. According to PCI DSS requirements (PCI Security Standards Council, 2016), SSL and early versions of TLS must no longer be used as a security control after June 30, 2018.

### Preventing Cyberattacks

A study titled “Flipping the Economics of Attacks” published by the Ponemon Institute in January 2016 analyzes the economic motivation of the cybercriminal and how organizations can dissuade or prevent attacks.

The study surveyed 304 experts (cyber attackers) in the United States, United Kingdom, and Germany. The panel of experts were chosen based on their participation in Ponemon Institute activities and information technology security conferences. They were assured anonymity and were familiar with present-day hacking methods. The study found that 69% of cyber attackers are motivated by profit, yet their average yearly earnings are less than \$30,000. Technically proficient cyber attackers are spending an average of \$1,367 annually for specialized toolkits to execute attacks. Of cyber attackers surveyed, 72% said they would not waste time on an attack that will not quickly result in a high yield of profitable information. The cyber attackers also indicated that they take more than double the time to plan and execute attacks on organizations with strong security defenses. Additionally, of all the technologies available, 55% of respondents cited threat intelligence sharing with other organizations as the most likely to thwart or curtail successful attacks (Ponemon Institute, 2016).

Sixty percent of cyber attackers will give up on trying to attack an organization if it takes more than 40 hours to execute a successful attack; however, the study explained that 53% of respondents say the time to plan and execute an attack and the costs associated with those attacks are decreasing because of the following reasons:

- Computer power such as memory and storage continues to become faster and less expensive each year.
- Malware (malicious code) is more available and can perform a variety of functions including stealing, encrypting, or deleting data; altering or hijacking core computing functions; and monitoring users' computer activity without their permission. Sixty seven percent of cyber attackers agree that the number of these known exploits and vulnerabilities have increased.
- Cyber criminals can launch more sophisticated attacks for less investment. Use of low-cost and effective automated hacker toolkits (software packages to assist cyber attackers) is increasing; many of these hacker toolkits can be found on the internet and are free of charge. Sixty three percent say their use of hacker tools has increased, and 64% say these tools are highly effective.
- Improved collaboration within the hacking community, which includes underground message boards and hacking conferences.
- Intelligence on organizations is easy to access via their website. Organizations may not be aware that information useful to a cyber attacker may be listed on the public website. Company directories and organization charts can be found on many public websites. (Ponemon Institute, 2016)

Since the evidence discussed above suggests cyberattacks can be deterred if the time investment involved in breaching the system is substantial, the Ponemon Institute recommends a holistic approach to cyber security, focusing on three important components of a security program: people, processes, and technology:

- People—Ensure senior management buy-in and commitment. Make security a cultural focus of the organization. Implement training and awareness programs that educate employees on how to identify and protect their organization from attacks.
- Process—Align the processes to the organization's risk tolerance and business objectives. Build processes first and then select the technology. Build a strong security operations team with clear policies in place to respond effectively to security incidents. Clearly communicate the established processes within the organization.
- Technology—Understand how the technology works and the exposure it creates. Monitor changes in technology and deploy effective tools. Ensure that software patches and updates are done on a timely basis. Invest in next-generation technology, such as threat intelligence sharing and integrated security platforms that can prevent attacks and other advanced security technologies. (Ponemon Institute, 2016)

## The Future of Communication

Since timely provision of information is key to public protection, regulatory boards can use current technology to optimize online communications, reaching the most licensees in the most effective way possible. Additionally, some upcoming innovations such as artificial intelligence (AI) may eventually change the standard of online interaction.

### Web Design

People are increasingly expecting interactions with websites and applications to be easier, more intuitive, more natural, engaging, and fast regardless of the device or browser used. Site design needs to keep pace with user expectations, and a number of design trends support this goal.

There are more than 7.2 billion mobile devices worldwide (Okeleke, Rogers, & Pedros, 2017). More than half of the world's population has access to a smartphone and that number will continue to grow (Kemp, 2017). It is increasingly important that Web designers ensure that website experiences are the same or similar regardless of the device used. The goal should be to make websites and content as usable as possible for as many people as possible, whether they are using a desktop computer, a laptop, a mobile phone, a tablet, a television, a watch, or another device.

The use of AI and machine learning continue to increase in many areas of business, including Web design. AI is increasingly being used on sites to present more human-like and more personalized interactions based on user inputs and behavior. A good example of AI on websites is chatbots used for customer support. AI can recognize the content and context of customer questions and deliver responses that also consider business-developed key messages and scripts (Hyken, 2017).

## Conclusion

We are entering a new era of “precision,” based on the premise that what works for one person may not be suitable for another due to the numerous factors from individual genetic profiles to individual environments and lifestyles. The new science of predictive data analytics uses large data to make decisions, such as the best and safest treatment for an individual patient.

Patient safety is the fundamental principle of health care and remains a global concern. The WHO's new report, *Patient Safety: Making Health Care Safer*, estimated that approximately 42.7 million adverse events occur annually among 421 million hospitalizations in the world. In addition, the annual estimated cost associated with medication error is \$42 billion (U.S. dollars), which is approximately 1% of expenditure on health worldwide. The WHO emphasized that patients are the priority for quality health care and called to reduce the severe, avoidable harm related to medication by 50% worldwide over the next 5 years (WHO, 2017).

So, what are the implications for regulators? Regulators can prepare for this change, address it when speaking to educators and clinicians, and use it as evidence that the regulatory system is as much in need of transformation as the health care system. Not only do all practitioners need to practice to their full potential, that potential also needs to grow. All levels of nurses need to expand their knowledge and skills to care for the patients in a new era of health care that may be closer than anticipated.

How can the principles of precision apply to regulation? What if regulators could predict which applicant with a felony offense is likely to recidivate; which applicant is most likely fraudulent; or which respondent that made a serious error is likely to repeat it? What if we knew the best ways to remediate and educate according to a nurse's violation, employment setting, home environment, and other predictive variables? Decisions about licensure could be made based on data, and decisions about discipline could be based on the type of remediation and monitoring most suitable for a given individual. We would increase public protection, eliminate uncertainty, and improve quality of care. These are the many possibilities emerging from the science of predictive data analytics.

## Summary

- Expect changes in workforce needs with a shift towards primary care and public health.
- CHWs and community paramedics will continue to grow in number and, potentially, the expansion of their skills will overlap with nursing's role if nursing does not take a more active involvement in reaching rural and underserved areas.
- Nurses of all levels need to be knowledgeable in genetics, pharmacogenomics, and genetic testing and have skills in taking a family history and interpreting and explaining genetic testing. This need has strong implications for educators.
- Technology will continue to become a pervasive part of health care delivery with remote monitoring devices providing ongoing assessment of a patient's condition.
- Mobility no longer implies that nurses want to live in one state and practice in another. Patients are increasingly mobile and, using advancements in technology, can be monitored from anywhere in the world. This trend has implications for both national and international licensure. Nurses monitoring patients in states outside the eNLC will require a license in every state where the patient is located.



- The 21st Century Cures Act and the Precision Medicine Initiative will impact all areas of nursing. Nursing leaders in regulation, practice, and education need to be ready for the advancements in health care to ensure that nurses are knowledgeable and that patients are safely cared for in this new era of medicine.
- Precision medicine will require interdisciplinary teams. Nursing, medicine, and other health care disciplines need to collaborate and work as equal partners in patient care.
- Team-based care may require team-based regulation.
- Advancements in scope of practice and allowing practitioners to practice to the full extent of their ability is of prime importance. Data indicate that APRNs have a safety record equivalent to physicians and are more likely to practice in rural and underserved communities when not limited by regulatory restrictions.
- The eNLC entered its implementation period in January 2018.
- Three important social and professional issues require nursing's attention. First, violence in the workplace needs to be managed and addressed by nursing leaders. Secondly, as states legalize both medicinal and recreational marijuana, questions continue to arise as to the impact on patient safety and the impairment of a health professional. Lastly, the opioid epidemic continues to be a paramount issue for both the public and the nursing profession. The 21st Century Cures Act is providing \$1 billion to states to manage opioid abuse.
- New issues are arising in cybersecurity, and regulators should evaluate their own systems and potential upgrading that may be needed.

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## APPENDIX A

### **Board of Nursing Practice and Position Statements, Declaratory Rulings, Advisory Opinions and Interpretive Guidelines**

A review of position/practice statements, clinical practice advisories, advisory/declaratory rulings, advisory opinions, and interpretive guidelines developed by boards of nursing (BONs) was conducted. Eight states (Arizona, Arkansas, Massachusetts, Minnesota, Ohio, Oregon, Texas, and Wyoming) adopted and/or revised statements/opinions related to the administration of sedation, analgesia and/or anesthesia. Another predominant theme involved the prescribing of opioids, other controlled substances, and opiate antagonists for which six states (Arizona, Indiana, Kansas, Louisiana, Nevada, and Wyoming) created statements/opinions. The purpose of these guidance documents is to provide direction to practicing nurses. They reflect the decisions made by the BONs regarding specific nursing practice concerns. BONs can review the existing guidance documents with the intent of anticipating any emerging issues and trends that may affect their BON in the upcoming year.

The following is a list of the position/practice statements, clinical practice advisories, advisory/declaratory rulings, advisory opinions, and interpretive guidelines issued or revised by BONs during September 2016 through September 2017:

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#### Alaska

- Adopted the following advisory opinion: Scope of Nursing Practice Decision-Making Framework

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#### Arizona

- Revised the following advisory opinions: Certified Nurse Midwives Ordering Regional Analgesia in Labor Management, Analgesia by Catheter Techniques: Role of the RN (Epidural, Intrathecal, Interpleural, Perineural) The Use of Controlled Substances for the Treatment of Chronic Pain, Determination of Death: Role of RN/LPN, Delegation of Nursing Tasks by RN/LPN, External Jugular Cannulation for Peripheral IV (EJ PIV) and/or Peripherally Inserted Central Catheter (EJ PIV), Endoscopic Procedures: The Role of the RN/LPN, Flexible Sigmoidoscopy for Screening Purposes, Intranasal Administration of Midazolam (Versed) for Treatment of Signs and Symptoms of Acute Seizure Outside the Clinical Setting, Infusion Therapy/Venipuncture: the Role of the LPN, Immunization Administration Using a Nursing Protocol, Ionizing Radiation for Diagnostic Use, Lumbar Puncture, Laparoscopic Adjustable Gastric Band (LAGB) Fill, Palliative Sedation at End of Life, Pacemaker Wires (Removal of Temporary), Prescribing Buprenorphine and/or Providing Treatment for Opioid Use Disorders, Prescriber Use of the Controlled Substance Prescription Monitoring Program (CSPMP), Registered Nurse First Assistant (RNFA), The Role of the Clinical Instructor, Scope of Practice Decision Tree, Standing Orders, Protocols, Pre-printed Orders, & Order Sets (Also known as Decision Support Tools), Trigger Point Injection, Intraarticular Joint Injection, and Facet Joint Injection.

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#### Arkansas

- Revised the following position statement: Administration of IV Moderate Sedation

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#### Hawaii

- Posted the following: Scope of Practice Decision Making Framework, Exclusionary Formulary for Advanced Practice Registered Nurses Granted Prescriptive Authority, Guidelines for Nursing Delegation

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#### Indiana

- Posted the following: Changes to Indiana Law Concerning the Prescribing and Dispensing of Opioids

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#### Kansas

- Adopted the following guideline/position statement: Joint Policy Statement on the Kansas Board of Healing Arts, Nursing and Pharmacy on the Use of Controlled Substances for the Treatment of Chronic Pain

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#### Kentucky

- Revised the following advisory opinions: Roles of Nurses in the Administration of Medication Per Intraspinal Routes, Roles of Nurses in the Care of Prenatal and Intrapartum Patients, Roles of Nurses In Psychiatric-Mental Health Nursing Practice, Roles of Nurses and Technicians in Dialysis, Cardiopulmonary/Respiratory Nursing Practice, Removal of Arterial and Venous Access Devices (Sheaths) and Use of Mechanical Compression Devices by Nurses, Scope of Practice for Advanced Practice Registered Nurses in the Performance of X-Ray Procedures and Operating Mobile X-ray Equipment

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#### Louisiana

- Adopted the following declaratory statement: RN's and APRN's Working Extended Hours, APRNs Prescribing Buprenorphine for the Office-Based Treatment of Substance Use Disorders
- Reaffirmed the following declaratory statement: The Registered Nurse Transporting Critically Ill Neonates
- Adopted the following practice opinions: Joint and Tendon Sheath Injections by APRNs, Delegation of Gastroonomy Tube Feedings to Unlicensed Personnel in ICF Facilities for Individuals with Intellectual Disabilities

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#### Massachusetts

- Revised the following advisory rulings: Cosmetic and dermatologic procedures; Advanced Practice Registered Nurses (APRNs) as first assist at surgical procedures; Management of pain; Administration of medications for sedation/analgesia; Registered Nurses (RNs) as first assistants at surgery

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#### Minnesota

- Reaffirmed the following: Statement of accountability by the RN for administration of medications classified as anesthetics

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#### Nebraska

- Revised the following advisory opinions: Patient abandonment, CPR: Nurse's accountability to perform cardiopulmonary resuscitation, RN and Emergency Medical

- Treatment and Labor Act (EMTALA) medical screening exam
- Retired the following advisory opinions in favor of the Decision-making Model: Accountability, Arterial lines, Gastric band adjustments, Intrauterine pressure catheters, Licensed Practical Nurse (LPN) & gynecological services, LPN & laboring obstetrical patients, RN first assist, RNs and airway management, Standing orders & protocols

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#### Nevada

- Adopted the following guidelines: Nevada opioid prescribing guidelines for APRNs

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#### New York

- Updated Non-patient specific orders and protocols, Immunization Guidelines for Schools, and Guidelines for Medication Management in Schools

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#### North Carolina

- Revised the following position statements: Cosmetic procedures; Death and resuscitation; Dialysis in the acute care, community centers, and home settings; Staffing and patient/client safety

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#### Ohio

- Revised the following interpretive guidelines: RN performance of conservative sharp wound debridement; Role of the RN in monitoring obstetrical patients receiving epidural infusions; Role of the RN in administering, managing, and monitoring patients receiving epidural infusions: Excluding obstetrical patients; Licensed nurse's role in the care of patients receiving intramuscular, subdermal, or subcutaneously injected medications for cosmetic/aesthetic treatment; RN performance of a patient health history and physical examination for purposes of providing nursing care

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#### Oklahoma

- Revised the following position statements and guidelines: Employment of nursing students or non-licensed graduates; Exclusionary formulary for APRNs with prescriptive authority; Limited obstetric ultrasound and limited ultrasound in a reproductive medicine setting; Examinations performed by RN; Patient assessment guidelines

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#### Oregon

- Revised the following interpretive statements: RN who administers pharmacologic agents to patients to achieve moderate or deep sedation; RN or LPN who participates in vascular and non-vascular access and infusion therapy;

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#### South Carolina

- Revised the following position statement: Recommended age parameters for the APRN practicing in South Carolina
- Revised the following advisory opinions: Scope of practice of RN to administer medications such as anti-neoplastic agents intrathecally through established reservoirs; Role and scope of responsibilities of the LPN to

perform physical assessments; Role and scope of responsibilities of the LPN to verify blood or blood products with an RN before infusion by the RN; Role and scope of responsibilities of the RN to deploy extravascular collagen hemostasis devices; Role and scope of a licensed nurse practicing in a school setting to select, train, determine competency and evaluate unlicensed school personnel in the provision of treatments and administration of medications required to meet a specific student's needs in the event that a medical emergency occurs when a licensed nurse is not readily available; Role and scope of responsibilities of RN and LPN to make pronouncements of death in a health care institution or in the home as a representative of an agency where care is being provided; Role and scope of responsibilities of RN and LPN to perform conservative sharps debridement of necrotic tissue as ordered by the authorized licensed provider; Role and scope of responsibilities of RN in the emergency department of a health care agency to be responsible for patient triage and discharge from the emergency department without physician order; Role and scope for an RN or LPN to supervise emergency medical technicians (EMTs) and paramedics in the emergency department of an agency functioning as EMTs and paramedics; Role and scope of responsibilities of the RN to perform the duties of the Registered Nurse First Assistant in the operating room setting; Role and scope of responsibilities of the RN to insert the intraosseous infusion device, and administer fluids, blood and blood products and medications; Scope of practice for a licensed nurse to be responsible for marking the surgical site for correct procedure verification; Role and scope of responsibility of the RN and LPN to perform basic (Level I), intermediate (Level II) and advanced (Level III) foot and nail care; Role and scope of practice of an RN to administer paralytic agents intravenously; Role and scope of practice for a licensed nurse to obtain a pap smear and/or perform a bimanual exam; Role and scope of practice for the RN and LPN to remove, reposition or reinsert tracheostomy tubes in children and adults with well-established stomas in the home, school or other community setting; Role and scope of the RN to utilize ultrasound guidance and assistance for peripheral intravenous (IV) catheter placement

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#### Tennessee

- Approved the following position statements: Continued approval of schools of nursing; Deeming doctorate of nursing practice programs as approved schools of nursing; high school equivalency; Simulation; Foreign-educated nurses; Graduates of Masters in Nursing initial licensure education program; Unreadable biometric criminal background check; Retirement of advanced practice registered nurse certificate; Approved APRN licensure certification organizations and exams; Abandonment of patients; Advisory private letter rulings; Decision-making guidelines; Licensed practical nurse role in physical assessment; Licensed practical nurse role in intravenous access and infusions in peripheral lines; Licensed practical nurse role in intravenous access and infusions in central lines; Supervision of licensed practical nurses; Licensed practical nurses in a supervisory role;



Licensed practical nursing care of ventilator dependent patients in the home health setting; Emergencies; Reporting incompetent, unethical or illegal practice; Skilled nursing services rendered by unlicensed personnel; Licensed practical nurse's role in an outpatient end stage renal disease dialysis setting; Prescribing for oneself and one's family; Lapsed license; Non-compliance with continued competence requirements; Patient safety: Culture of learning, justice and accountability; Disciplinary guidelines; Disciplinary guidelines for sexual boundary violations

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#### Texas

- Revised the following position statements: Nurses carrying out orders from physician assistants; Board rules associated with alleged patient "abandonment"; Role of the nurse in moderate sedation; Performance of laser therapy by RNs or Licensed Vocational Nurses (LVNs); Continuing education: Limitations for expanding scope of practice; Delegated medical acts; Use of American Psychiatric Association diagnoses by LVNs, RNs, or APRNs; Development of nursing education programs; Nurses carrying out orders from pharmacists for drug therapy management; Professional boundaries including use of social media by nurses

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#### Vermont

- Retired the following position statements: Role of the nurse in the administration and monitoring of moderate sedation; Nurses' role in the administration of a local anesthetic into a catheter for the purpose of a nerve

block; Role of the nurse in the administration of propofol; Role of the RN in the care of a pregnant woman receiving analgesia-anesthesia through an epidural catheter; Role of the RN and APRN as first assistant; Nursing role in dermatologic procedures; Role of the LPN in IV therapy

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#### Virginia

- Adopted the following guidance documents: Continuing competency violations for nurses; Practice agreement requirements for licensed nurse practitioners
- Revised the following guidance documents: Sanctioning Reference Points Manual; Delegation of authority to Board of Nursing RN education and discipline staff; Telemedicine for nurse practitioners

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#### Washington

- Adopted the following advisory opinion: Dispensing medication/devices for prophylactic and therapeutic treatment of communicable diseases and reproductive health by public health nurses

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#### Wyoming

- Approved the following advisory opinions: Amniotomy; Auricular acupuncture; Death certificates; Delegation; Opiate overdose emergency treatment; Pericardial flush; Suprapubic catheter insertion; Telephonic & electronic nursing
- Revised the following advisory opinions: Certified Nurse Assistant (CNA) role; CNA II role; IV administration of low-dose ketamine for pain for adults



## APPENDIX B

### Nurse Populations by State

State	Resident Population, 2016*	Employed RNs**	Employed LPNs/VNs**	RNs per 100,000	LPNs/VNs per 100,000
Alabama	4,863,300	47,440	13,030	975	268
Alaska	741,894	5,570	500	751	67
Arizona	6,931,071	52,610	6,100	759	88
Arkansas	2,988,248	23,380	12,100	782	405
California	39,250,017	274,650	68,110	700	174
Colorado	5,540,545	47,590	5,010	859	90
Connecticut	3,576,452	32,930	7,780	921	218
Delaware	952,065	11,320	2,120	1,189	223
District of Columbia	681,170	10,320	1,720	1,515	253
Florida	20,612,439	174,710	44,820	848	217
Georgia	10,310,371	73,330	26,510	711	257
Hawaii	1,428,557	11,300	1,280	791	90
Idaho	1,683,140	12,330	2,390	733	142
Illinois	12,801,539	121,670	20,140	950	157
Indiana	6,633,053	63,870	16,090	963	243
Iowa	3,134,693	32,370	6,340	1,033	202
Kansas	2,907,289	27,130	7,380	933	254
Kentucky	4,436,974	45,500	10,520	1,025	237
Louisiana	4,681,666	44,780	20,580	956	440
Maine	1,331,479	14,190	1,250	1,066	94
Maryland	6,016,447	53,330	11,640	886	193
Massachusetts	6,811,779	85,140	15,890	1,250	233
Michigan	9,928,300	92,670	14,980	933	151
Minnesota	5,519,952	61,830	17,070	1,120	309
Mississippi	2,988,726	28,590	8,990	957	301
Missouri	6,093,000	67,920	15,810	1,115	259
Montana	1,042,520	9,800	2,490	940	239
Nebraska	1,907,116	21,240	5,100	1,114	267
Nevada	2,940,058	20,250	2,570	689	87
New Hampshire	1,334,795	13,260	2,290	993	172
New Jersey	8,944,469	79,400	16,360	888	183
New Mexico	2,081,015	16,200	2,100	778	101
New York	19,745,289	180,730	46,990	915	238
North Carolina	10,146,788	99,050	17,930	976	177
North Dakota	757,952	8,710	2,670	1,149	352
Ohio	11,614,373	128,030	39,920	1,102	344
Oklahoma	3,923,561	27,660	11,580	705	295
Oregon	4,093,465	35,220	2,780	860	68
Pennsylvania	12,784,227	139,480	38,020	1,091	297
Rhode Island	1,056,426	12,150	1,060	1,150	100
South Carolina	4,961,119	41,800	9,440	843	190
South Dakota	865,454	12,130	1,820	1,402	210
Tennessee	6,651,194	60,080	23,620	903	355
Texas	27,862,596	207,810	70,810	746	254

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**Nurse Populations by State** *(continued)*

State	Resident Population, 2016*	Employed RNs**	Employed LPNs/VNs**	RNs per 100,000	LPNs/VNs per 100,000
Utah	3,051,217	21,470	1,910	704	63
Vermont	624,594	5,850	1,350	937	216
Virginia	8,411,808	63,820	21,410	759	255
Washington	7,288,000	55,350	7,250	759	99
West Virginia	1,831,102	20,880	6,090	1,140	333
Wisconsin	5,778,708	55,410	7,990	959	138
Wyoming	585,501	4,970	680	849	116

*Note.* LPN/VN = licensed practical nurse/vocational nurse; RN = registered nurse.

\*The data for resident population are from the U.S. Census Bureau (Census Bureau, 2017).

\*\*The data for employed RNs and LPNs are from the U.S. Bureau of Labor Statistics Occupational Employment Statistics (BLS, 2017a).

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## APPENDIX C

### Current NCSBN Grant and Fellowship Activity

#### Center for Regulatory Excellence Grant Recipients

2017 Projects	Primary Investigator	Grantee Institution
National Study of Clinical Education in Family Nurse Practitioner Programs	Kristina Thomas Dreifuert, PhD, RN, CNE, ANEF	Marquette University
Are there Outcome Differences between NMNEC ADN, BSN, and ADN/BSN Co-enrolled Students: Testing an Educational Model for Academic Progression in Nursing	Judy Liesveld, PhD, PPCNP-BC, RN	University of New Mexico Health Sciences Center College of Nursing
The Growth of For-Profit Nursing Programs and their Effect on Time to Graduate and FirstTime NCLEX Exam Pass Rates	Patricia Pittman, PhD	The George Washington University
State Nurse Practitioner Scope-of-Practice Regulation and Access to Health Care in Rural and Primary Care Health Professional Shortage Areas	Ying Xue, DNSc, RN	University of Rochester School of Nursing
<b>2018 Projects (to date)</b>	P.I.	Grantee Institution
Substance Use Disorder in Nurses: Exploring Psychological Trauma as a Risk Factor	Karen J. Foli, PhD, RN, FAAN	Purdue University School of Nursing
Nurse Practitioner Supply, Practice, and Economic Efficiency to Benefit the Underserved and Medicaid Patients	Lusine Poghosyan, PhD, MPH, RN, FAAN	The Trustees of Columbia University in the City of New York
The Impact of the Nurse Licensure Compact on Patient Outcomes, Inpatient Costs, and Hospital Financial Performance During Natural Disaster	Jeannie P. Cimiotti, PhD, RN, FAAN	University of Florida
Regulatory Scholar: Nurses' Readiness and Motivation to Provide Care for Patients Who Use Alcohol and Opioids: Informing Nursing Education and Practice Regulations	Khadejah Mahmoud, MSN, RN	University of Pittsburgh School of Nursing

#### Institute of Regulatory Excellence Completed Projects

2017 Projects	Fellow	Board
Engagement in Nursing Regulatory Policy: Educator Perspectives	Alison Wainwright	College of Registered Nurses of British Columbia
Evaluation of the Student Practice Event Evaluation Tool (SPEET) by Nursing Students	Crystal Tillman	North Carolina Board of Nursing
Prescribing Opioids for Non-cancerous, Chronic or Intractable Pain: Are Advanced Practice Registered Nurses Ready?	Cynthia York	Louisiana State Board of Nursing
A License for Life? Not so Fast. Understanding the Public's Perception of the Mechanisms to Promote the Continuing Competence of Registered Nurses in Nova Scotia	Jennifer Best	College of Registered Nurses of Nova Scotia
Nursing Regulation: Should There Be An App For That?	Kerry Howell	College of Licensed Practical Nurses of British Columbia
An Exploration of Mandatory Treatment Agreements as a Regulatory Mechanism for Monitoring Nurse Practitioner Controlled Substance Prescribing	Lynn Miller	College of Registered Nurses of Nova Scotia

## The Consensus Model for APRN Regulation: Licensure, Accreditation, Certification, and Education

The Consensus Model for APRN Regulation was developed jointly by the APRN Consensus Work Group and the NCSBN APRN Advisory Committee and endorsed by more than 48 participating national organizations, and released in 2008. The model is structured to address the four entities that define an APRN: licensure, accreditation, certification, and education. The model identifies several points on which APRNs should be uniformly defined:

- **Title:** The model recognizes the term advanced practice registered nurse (APRN) as the legally protected title for a nurse that meets the criteria therein.
- **Role:** The model also identifies four roles under the umbrella term "APRN": certified registered nurse anesthetist (CRNA), certified nurse midwife (CNM), clinical nurse specialist (CNS), and certified nurse practitioner (CNP).
- **License:** The APRN receives and maintains a second, separate license that is distinct from their registered nurse license.
- **Population focus:** Each APRN is educated and licensed not only in their role, but in one or more of six population foci: family/individual across the lifespan, adult/gerontology, neonatal, pediatrics, women's health/gender-related, or psychiatric/mental health. Nurse practitioners also have a focus of primary or acute care.
- **Education:** The entry level for all APRNs is a graduate degree or postgraduate certificate awarded by an accredited academic institution.
- **Certification:** In addition to graduation from an accredited institution, an APRN must also pass an accredited, psychometrically sound, legally defensible certification examination that measures competency in their role.
- **Independent practice:** The model calls for individual APRNs to be licensed as independent practitioners for practice at the level of one of the four roles and at least one of the six population foci, with no regulatory requirements for collaboration, direction, or supervision.
- **Independent prescribing:** The model states that independent prescriptive authority is essential to independent practice and is appropriate, based on the APRN's education and professional experience.

