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The Continuing Saga of Nurse Staffing

Historical and Emerging Challenges

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Registered nurses are the backbone of America's health systems, providing care and support to patients across the lifespan. Appropriate nurse staffing is critical to ensure safe and effective care for patients. Nurse staffing is a complex topic; nurse administrators find themselves facing escalating challenges to meet staffing needs. These challenges can be attributed to a variety of factors, both historical and new. This article examines the current factors contributing to nursing shortages, nurse staffing challenges, and the implications of inappropriate staffing on both financial and patient outcomes.

Why are we talking about nurse staffing again? This never-ending saga of trying to effectively schedule the best mix of experienced and novice staff is a vexing conundrum. The current healthcare economic changes are driving repeated cost reduction efforts. Continuing challenges to the Patient Protection and Affordable Care Act (ACA)[1] and access to care for the uninsured equate to uncertainty in how and where patients will receive necessary care. Research is clear that insufficient registered nurse (RN) direct care hours lead to increased serious safety events for patients, impacting hospital reimbursement.[2,3] What new insights can help explain the supply and demand factors underlying this situation?

Understanding the complicated interplay among drivers of increased demand and reduced supply of RNs can be examined through a systems framework. Figure 1 depicts a simplified view of inputs arising from supply and demand factors, throughput (effective nurse staffing), and output-safe, high-quality, reliable nursing care delivery.

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Factors Influencing Supply and Demand

Throughout the last century, the United States has been experiencing cyclical nursing shortages, documented as early as the 1950s.[4] There are close to 3 million nurses currently licensed in the United States.[5] This group comprises the largest segment of healthcare professionals nationally. According to the most recent nursing workforce projections from the Health Resources and Services Administration, there will be both surpluses and shortages between now and 2030.[5] This results in a maldistribution of nurses across the country. The supply and demand for nurses across states varies considerably, indicating a need for strategies at the national, regional, and local levels. In the past, documented shortages have been attributed to strictly supply or demand side factors. The current predicted shortage is unique in the sense that both supply and demand factors exist. Table 1 outlines some of these factors.

Table 2 highlights reported challenges for nurse staffing in rural communities and long-term care, as well as the impact of technology and workplace violence on nurse satisfaction and supply.

When inappropriate staffing becomes frequent, the remaining RNs become fatigued, discouraged, and disillusioned. This repetitive situation actually "feeds itself," causing more RNs to move away from direct patient care and/or leave that care delivery setting. When nurses feel that they cannot finish their responsibilities or must take "shortcuts" in essential care activities, this "missed care" results in frustration and a sense of disillusionment with the organization

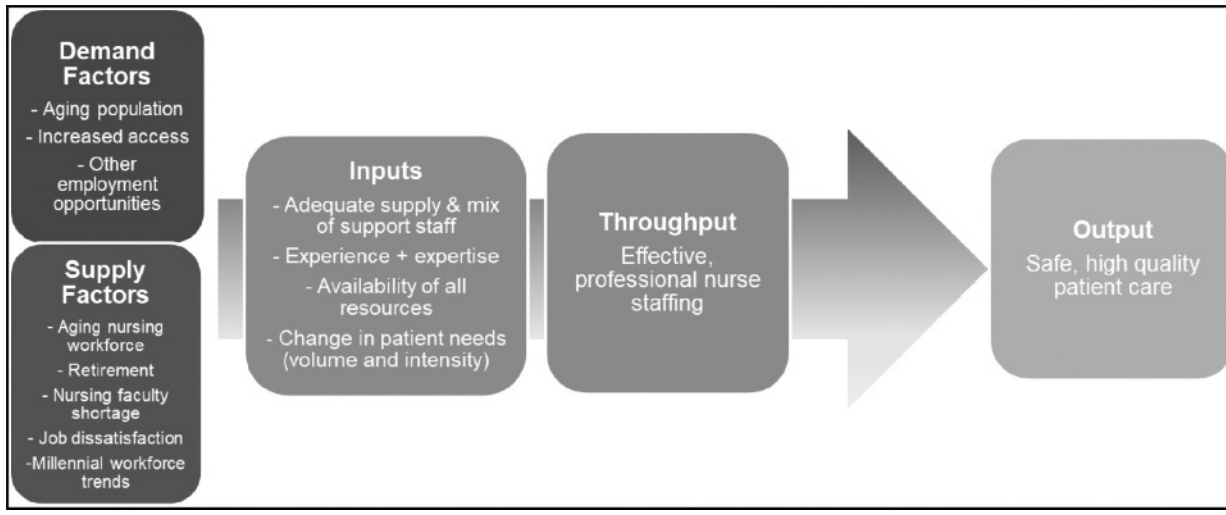

Figure 1. Systems framework: nurse staffing for effective patient care.

and leaders.[19] Nurses wonder about management's support when they bring staffing concerns, or other resource issues such as supplies, forward and there is repeated nonresponse. Workplace incivility and cultures that do not promote patient safety and allow disruptive behavior[20] become stressful and lead staff to believe that leaders do not care about them and their workplace. This dissatisfaction may be reflected in employee engagement (job satisfaction) scores, demonstrating concerns about the work environment[21] including the inability to have enough resources to adequately perform their responsibilities. Earlier studies show that this dissatisfaction can lead to "burnout"[22] and a desire to leave direct care at the bedside. Some nurses may leave nursing and healthcare entirely because of the resulting cycle of disillusionment (Figure 2).

Implications for Patients and Health Systems

One of the important differences between the current situation and previous shortages is the increasing amount of published research on the impact of inadequate direct care hours on patient outcomes. When there are inadequate RN resources, organizations usually try to supplement the care team with assistive personnel or outside agency staffing. This often does not suffice: critical elements of patient care are left undone or missed, as the RNs "triage" their responsibilities, doing what they can with the time and resources available that shift; as Lake et al[19] noted, the consequences can be serious.

Implications for Patients

o Delayed, unfinished, or missed care

- When nurses have a higher patient load, there is an increase in delayed, unfinished, and missed care. Missed care can be defined as "required patient care that is omitted or delayed in response to multiple demands or inadequate resources."[19]
- The most influential cause of missed care can be attributed to low nurse staffing; when there are not enough nurses present, necessary care is missed and less likely to be completed.[23]
- When patient-nurse ratios increase because of inappropriate staffing, care activities can be missed. In 1 study, the most frequently missed care activities due to inappropriate staffing were
  - ambulation (84%);
  - assessing effectiveness of medications (83%);
  - turning (82%);
  - oral care (82%);
  - patient teaching (80%); and
  - timeliness of PRN medication administration (80%).[23]
- Further results from this study indicated that there was a strong negative correlation between hours RNs spent with patients and missed care.[23]
  - A recent cross-sectional study examined data from 2187 neonatal intensive care units, PICUs, and pediatric units to examine missed care in the pediatric setting. It was concluded that more than 50% of nurses reported missed care from previous shifts, with an average of 1.5 missed necessary care activities.[19] The most commonly missed activities reported in this analysis were planning, comforting, and teaching, which could potentially contribute to higher readmission rates.[19]

o Adverse patient outcomes

Table 1. Factors Influencing RN Supply and Demand

Supply Side Factors	Demand Side Factors
Aging nurse workforce pending retirements • According to the 2017 National Nursing Workforce Survey, 50.9% of respondents were 50 years or older.[6] • Despite the prediction of growth in nursing positions from the Bureau of Labor Statistics, almost 40% of RNs are older than 50 years and predicted to retire by 2030.[7] The aging workforce will negatively affect the number of experienced nurses working nationwide.	Aging population • There is an increased call for nurses to care for our aging population. • It was reported by the US Census Bureau that, by 2050, there will be more than 83 million people in the United States older than 65 years—almost double the amount from 2012.[8] As the number of older adults increases throughout the country, there will be an increased need for geriatric care. The number of individuals living with chronic diseases will increase, prompting the need for complex nursing care. • As the demographics in our country continue to change, there will be an even greater call for nurses to care for this aging population.
Nursing faculty shortage • As the need for nurses continues to increase, there is a call for nursing schools to educate more nurses. According to the American Association of Colleges of Nursing (AACN), 64 067 qualified nursing applicants were denied admission to baccalaureate and graduate nursing programs. This was attributed to insufficient faculty, clinical sites, workspace, preceptors, and budget limitations.[9] • In the 2016–2017 survey conducted by AACN, 56.2% of AACN member schools had open full-time faculty vacancies.[11] Many factors were reported as barriers to filling these spots, with the most prevalent being insufficient funds to hire new faculty and a limited pool of doctoral-prepared faculty.[11] Other barriers reported included difficulty in finding faculty in rural areas, loss of faculty due to retirement, and finding faculty with the right specialty mix.[11]	Increased access to healthcare • Recent reforms in healthcare have provided millions of Americans increased access to healthcare coverage.[10] As individuals gain access to healthcare services, there will be an increased demand for nurses to care for these individuals in multiple settings. • According to the May 2017 Medicaid and Children's Health Insurance Program (CHIP) Application, Eligibility Determination and Enrollment report, 74 550 529 individuals were enrolled in Medicaid and CHIP—representing a 29% increase.[10] • As millions continue to enroll in publically funded healthcare programs, there will be an increased demand for nurses across the care continuum.
Job dissatisfaction • Nurse burnout has been documented as early as the 1970s, with "reality shock" causing many nurses to leave the profession.[12] As technology advances exploded during the subsequent decades, the role of the nurse has evolved, with more crucial responsibilities expected of nurses. • The current RN turnover rate is 14.6%,[13] with the top 10 reasons why RNs resigned being personal reasons, job relocation, career advancement, scheduling, retirement, workload/staffing ratios, salary, commute, management, and benefits.[13]	Other employment opportunities • People are attracted to nursing because of the career opportunities available in direct and nondirect patient care. These opportunities include work in nonclinical roles and advanced practice nursing roles such as nurse practitioners, certified RN anesthetists, and nurse midwives. • According to the 2017 National Nursing Workforce Survey, 64.2% of the RN workforce holds a bachelor degree or higher.[6] The number of RNs with a master's degree in nursing or greater grew from 13.8% in 2013 to 17.1% in 2017[6]; of this percentage, 1.2% reported having a doctorate in nursing practice—almost double the amount reported in 2015.[6]
Millennial workforce trends • Millennials expect to find work-life balance in their employment situations. • Millennials are comfortable with technology and expect mobile and innovative support for practice. • Millennials are more likely to act as "knowledge workers" and move to a different setting or employer, if their needs or expectations are not met.	

- Evidence from well-regarded studies has linked inpatient staffing to patient mortality and adverse outcomes.[2,22,24]
- The Agency for Healthcare Research and Quality recently released their updated "National Scorecard on Hospital-Acquired Conditions: Updated Baseline Rates and Preliminary Results 2014–2016".[25] The costs, both human and financial, associated with patients experiencing 1 or more of these avoidable conditions are staggering. A number of "hospital-acquired conditions" are correlated with inadequate RN staffing, as reported by Aiken, Needleman, and Lake, among others.[19,22,24]
- The New England Journal of Medicine concluded that management of patients is compromised when nurse workload is high, leading to a higher risk of adverse events.[24] This study examined close to 200 000 patients across 43 nursing units and found that mortality increased by 6%

Table 2. Special Staffing Challenges

Rural Communities	Workplace Violence	Technology Challenges	Nursing Homes
• Approximately 1 in 5 Americans live in rural areas, and for many, care is miles away. • Rural hospitals face challenges recruiting nurses: often overshadowed by large urban Magnet® hospitals that offer more opportunities and lifestyle perks. • Recruitment challenges include a limited population for recruitment, lower pay, and limited employment opportunities for family members.[14] • In addition, many rural organizations face economic challenges and cannot financially support the costs of recruitment and retention of healthcare workers. • This shortage makes it difficult for those in rural areas to access health services.	• According to the Bureau of Labor Statistics, hospital employees are more likely to be unintentionally injured on the job compared with private industries, with injuries for hospital workers steadily rising since 2011.[15] • According to an Occupational Safety and Health Administration guide, 70%-74% of workplace assaults between 2011 and 2013 were in healthcare settings.[15] • Nurses are typically the frontline workers who work with patients and families the most during times of crisis. These families often take their aggression and hostility out on the nurses and their assistants. • In addition, nurses often work with verbally and physically aggressive patients. • Incidences of workplace violence have caused some nurses to leave direct patient care or nursing.	• The benefits of electronic health records (EHRs) compared with paper health records have been noted including better support of patient care and better clinical documentation. Despite the advantages of EHRs, it has been noted that there is a high nurse dissatisfaction with EHRs.[16] • Nurses are key users of EHRs, and the relationship among nurses, implementation of EHRs, and nurse satisfaction with EHRs is poorly understood. • A study in 2016 analyzed nurses from 45 countries on their satisfaction with their current EHRs. It was found that respondents had poor perceptions about the current state of EHRs.[16] • Issues were identified at system-level, user-task, and environment levels.[16] • It is important to consider interventions to improve nurse satisfaction with EHRs.	• It has been documented that there are special staffing challenges in nursing homes and long-term care facilities. One article reported a 60% annual turnover in these settings.[17] • Medicare has lowered the Star ratings in 1 of 11 of the nation's nursing homes because of inadequate numbers of RNs, with payroll revealing lower overall staffing levels than homes had disclosed.[18] • Many educational facilities have a lack of faculty members trained in geriatric care and a lack of curriculum to educate students on care for the geriatric population, leading to less students moving into this sector after graduation.[11]

on poorly staffed units compared with fully staffed units.[24] This study concluded that there was a significant association between mortality and below-target staffed shifts.[24]

- A 2017 cross-sectional study of 300 hospitals in 9 countries compiled data from 26 516 nurses, examining nurse staffing and mortality rates in patients after surgical procedures. This study concluded that there was a 16% increase in the likelihood of a patient dying when a nurse's workload was increased by just 1 patient.[2] When nurses have too many patients, they cannot complete all necessary care, leading to missed nursing care and an increased risk of dying.[2]

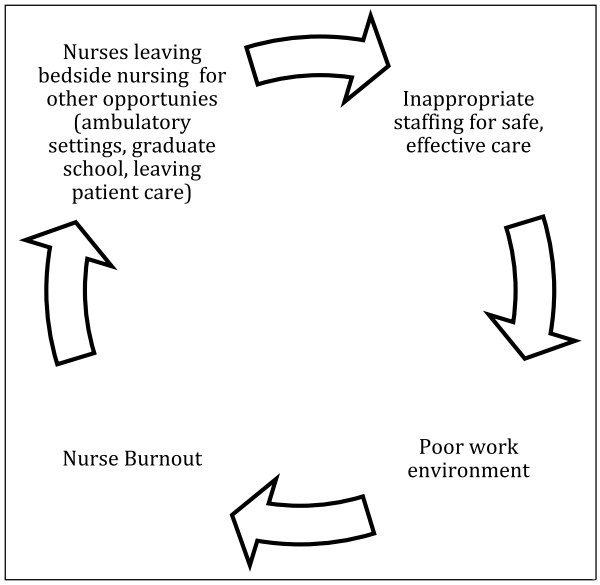

Figure 2. Cycle of disillusionment.

- Patient readmissions
  - The quality and quantity of time educating patients sufficiently and preparing them for discharge is critical to prevent readmissions.
  - Many evidence-based nursing interventions are fundamental to the discharge process, such as patient education, care coordination, complication prevention, and knowledge assessment.[26]
  - Nurses working in environments with inappropriate staffing may not have the time and resources to effectively monitor complications and adverse outcomes, which increases readmission risks.[26]
  - A study conducted in 2016 examined staffing from 661 cardiology and heart surgery units, combining the data with readmission rates. This study concluded that there was a significant difference in heart failure patient readmissions between the low-staffing group and the high-staffing

group—hospitals with lower RN staffing had a significantly higher readmission rate.[27]

- Poor patient experience
  - In 2015, Press Ganey released a report that analyzed the nursing work environment with a variety of factors, including patient experience. This report combined National Database of Nursing Quality Indicators data with patient experience data from the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores and Press Ganey Patient Experience survey scores.[21]
  - This analysis concluded the following:
    - Hospital Consumer Assessment of Healthcare Providers and Systems patient experience is significantly correlated with hours nurses spent with patients per day.
    - Pearson correlation of nurse staffing with Press Ganey satisfaction surveys showed that there was a strong correlation between nurse staffing and the patient experience including discharge, overall experience, tests that were performed, nursing interactions, and issues during their stay.
    - When analyzing HCAHPS scores and Press Ganey mean scores, it was found that patient experience scores of hospitals with higher RN staffing were consistently higher than those with low staffing.
    - When examining Press Ganey survey results, there was a 3- to 4-point difference in scores between top-staffed and low-staffed hospitals among the nursing-focused and discharge-related questions.
    - There was a greater differential for survey items that examined meeting the patients' social and emotional needs.[21]

Thus, the consequences to patients when staffing is inadequate can be serious, as can the impact upon the healthcare organization where the patient is receiving care. These impacts include financial, human resources, and reputational risks. The correlation between high RN turnover and reduced financial health is now understood by many health system leaders.

Implications for Health Systems and Hospitals

- High nursing turnover rates
  - Studies dating back more than a decade ago report that nursing work environment factors, such as staffing, work culture, job satisfaction, skill mix, and burnout, are linked to quality, safety, and patient care.[22]
  - Numerous studies have indicated that nurses in hospitals with inappropriate nurse-patient ratios are more likely to have higher nurse burnout, job dissatisfaction, and higher intent to leave.[12,13,22]
  - When nurses leave their patient care units, there is a negative effect on the remaining nurses. These remaining RNs end up with an increased workload and increased job stress, which leads to subsequent burnout and turnover.
  - In addition, nurse fatigue from understaffing leads to higher adverse outcomes and higher nurse turnover.[27] The link between nurse fatigue and adverse events has been closely studied. These studies link long work hours to high levels of work stress and reduced productivity. These studies have shown that worker fatigue increases the risk of adverse events, compromises patient safety, and increases risk to personal safety and well-being.[27,28] Frequently, when hospitals are short staffed, they encourage staff members to work overtime.[29] This increased overtime leads to worker fatigue, which leads to adverse outcomes and compromises patient safety.[27,28] In addition, this fatigue leads to additional staff burnout, increased turnover, and more understaffing issues.[29]
  - This sense of burnout and turnover can be attributed to a variety of factors, one of the most significant being low staffing. In the Press Ganey Special Report mentioned previously, a cross-domain analysis was performed to examine RN turnover.[21] This study examined the impacts of work environment and staffing on turnover rates. The results indicate that staffing had a stronger influence on nurse turnover than work environment. This analysis also found that nursing units with below-average staffing and poor work environments have the highest turnover rates.[21]
- Loss of experienced nurses
  - With the large number of nurses predicted to retire comes a significant loss of experienced nurses. This loss of experienced nurses can have widespread negative effects on patient care and patient outcomes. Experienced nurses are often seen as role models for new nurses, frequently training and mentoring new nurses once they are hired.
- Increased cost
  - In 2012, the Affordable Care Act established the Hospital Readmission Reduction Program (HRRP), which penalized hospitals financially for having higher-than-predicted readmissions. This has cost hospitals millions of dollars. Interventions that reduce readmissions, such as discharge teaching, patient education, and care coordination, are fundamental nursing responsibilities.

As a result, inappropriate staffing can lead to higher readmission rates and higher costs to hospitals.

- In a 2013 study, the relationship between nurse staffing levels and hospital performance in the HRRP was examined. This study concluded that better nurse-staffed hospitals had 25% lower odds of being penalized compared with lower-staffed hospitals.[30]
- Administrators often consider nursing a cost center that can be reduced, instead of a valuable and critical service line within the hospital with both direct and indirect benefits. In the article "The Economic Case for Fundamental Nursing Care," Needleman examined whether increasing the number of nurses to offset the costs of these adverse outcomes would be more affordable for hospitals.[31] In examining 4 key studies, it was noted that, when the cost savings of shorter lengths of stay and adverse outcomes for hospitals were used to offset the costs of increasing RN staff levels, the net costs for hospitals were low.[31] Hospital administrators should become more aware that safe, effective levels of RN staffing can be critical when considering the revenue and cost impacts from shorter lengths of stay, reduced readmissions, and reduced adverse outcomes.[31,32]
- High nursing turnover adds additional costs to the hospital to recruit, hire, and train new nurses. According to the 2017 National Healthcare Retention and RN Staffing Report from Nursing Solutions Inc, the average cost of turnover for a bedside RN ranges from $38 900 to $59 700.13 As a result, hospitals can lose $5.1 M to $7.86 M annually to replace nurses leaving the bedside.[13]

In summary, there are numerous challenges associated with ensuring safe, effective RN staffing in today's dynamic, complex, and intense healthcare environments. The implications of the inability to meet the patient care delivery demand with experienced, competent nurses are serious. Patient outcomes are affected, as is the financial health of the organization responsible for those patients' care. Nurse staffing is incredibly challenging—there is no single, comprehensive solution. It is imperative to understand the factors contributing to the fluctuation of supply and demand for nurses, the implications to patients and hospitals when nurse staffing is impaired, and the strategies necessary to ensure safe and effective staffing to maintain patient safety.

Every day, RNs complete demanding, dynamic, and complex work, which directly influences quality and patient safety. A recent study reinforced the impact of poor work environments on patient safety outcomes and satisfaction (both patient and staff) scores.[32] Understanding the work of nurses and their practice environment is crucial. It is necessary to communicate the critical work of nurses to leaders and the public, stressing the benefits of safe, effective staffing from a quality and financial standpoint. Safe and effective nurse staffing is more than a "numbers" game. Resources must be provided and adjusted as the dynamic patient care volume and intensity of patients' needs change, often several times within 1 single shift. Consider this most basic patient and family expectation of our healthcare delivery systems: Will there be enough competent nursing staff to care for me and my family when illness strikes?

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