By Kathleen Dracup, RN, DNSc, and Peter E. Morris, MD

**How Will They Learn?**

**By three methods we may learn wisdom: first, by reflection, which is noblest; second, by imitation, which is easiest; and third, by experience, which is the bitterest.**

—Confucius

Every day, she woke up with a sense of dread. Driving to the hospital, she would feel queasy as she began to think about the hours ahead. Would she be able to complete everything that needed to be done during her long shift? Would she have the knowledge and judgment she needed? Her mind would race through several potential disaster scenarios; she wondered if today would be the day that she might harm a patient, perhaps fatally. Terror was never far away.

The drive home was not any better. It usually involved a review of the mistakes caught just in time—the near misses. She reviewed diagnoses that she had felt uncertain about, medications she had looked up but already forgotten, and technology that had baffled her. She reviewed conversations, some with colleagues and some with family members, and wished she had said something different, or just had more time to listen and to consider what she was saying. It was an excruciating time in her new career as a nurse.

This is how a new graduate described her first 6 months of working as a nurse to us. She is an extremely talented woman who had worked as a microbiologist in a research laboratory for 10 years before choosing nursing as a career. She graduated from an accelerated nursing program designed for men and women who already had earned a college degree. The program was excellent, but she still felt incredibly poorly prepared for the clinical responsibilities that she assumed as a staff nurse in a large academic medical center. Even though she was not yet caring for patients in the intensive care unit, her ultimate career goal, patients on the general medical-surgical service where she worked were extremely ill and required close monitoring.

**Feeling the Burden of Responsibility**

The feelings of anxiety and dread described by this new graduate are not very different from those of any nursing student or medical trainee. But students are (we hope) protected from experiencing the feelings of a new graduate by their relationship with faculty, clinical teachers, preceptors, and other more seasoned practitioners. These are the individuals charged with guiding students in their learning while protecting patients from harm. By virtue of their status, students are viewed as learners and as individuals who need supervision and guidance. After the student graduates, the protective barriers provided by the educational system disappear and the newly graduated nurse or physician feels as if the expectations and the responsibilities have increased dramatically.

New graduates from schools of medicine and nursing have been entering the workforce for decades as medical residents and new graduate nurses. But there are special circumstances in health care today that make the challenges of accommodating these new clinicians in hospitals far greater than in times past. We believe that the elements of a perfect storm are brewing in hospitals today because of the recent changes in both professions.
The Dilemmas for Medicine

In 2003, the Accreditation Council for Graduate Medical Education instituted standards for all accredited residency programs, limiting the work week to 80 hours. These standards have been voluntarily adopted by residency programs in the United States and have resulted in a dramatic decrease in residents’ work hours from the frequently documented 100 to 120 hours per week to 80 hours per week.1 The reasons propelling the change in the United States have been primarily related to patient safety, in recognition that long hours on duty led to fatigue and errors in judgment.2 Residents’ work hours are far more limited in the countries belonging to the European Union and are on a legislated 9-year transition begun in 2000 that will ultimately lead to a maximum of 48 hours per week.3 In Europe, the reasons for the legislation to decrease duty hours have been primarily related to improving the quality of life of physicians in training.3 Given the changes that already have occurred in Europe and that are proposed to reduce residents’ duty hours even more, the regulations in the United States may be even more severely restricted in the future.

The decrease in duty hours for medical trainees has meant that medical residents (or “junior doctors” as they are called in European countries) are far more likely to be caring for patients whom they did not see at admission to the hospital and whom they do not know well. Even working 80 hours per week, medical residents in the United States are participating in more “handoffs,” in which they assume the case load of another resident who must leave the hospital to honor the new duty hour regulations. Thus, residents may be less familiar with many of the patients in their care than in times past and are less likely to be part of the regular team caring for the patient.

The Perfect Storm

The elements of change are different in nursing than in medicine, but they too are converging to create a challenging (and perhaps increasingly stressful and unsafe) environment. The perfect storm that is converging to create an increasingly problematic environment includes increasing numbers of new graduates entering the workforce, an aging nursing workforce inching toward retirement, and an increase in the complexity of care creating tremendous challenges to patient safety.

First, after years of decreasing enrollments, with fewer applicants enrolling in nursing programs, there has been a dramatic response to the nursing shortage. Media coverage of the current and impending shortage, combined with salary increases spurred by supply and demand, has resulted in unprecedented increases in the numbers of applications to schools of nursing. Universities have responded to the nursing shortage by increasing enrollments in current programs and by starting new programs. Across the United States, the number of new licensed registered nurses has grown dramatically. For example, in California, the number of new nursing graduates in 2008 was 70% higher than in 2004.4 In the past 4 years, government, foundations, and hospitals and health systems have poured nearly $200 million into California alone in an effort to increase the number of nursing students educated within the state and to reduce the nurse vacancy rate in hospitals (which is currently at 12%) as well as to meet projected future need.4 Because of the increased enrollment and graduations, new nurse graduates are seeking positions at hospitals and entering the workforce in unprecedented numbers.

Second, the nurse workforce is aging. Much has been written about the increased average age of nurses, but the reality of this increased age (47 years old on average nationally, with only one-quarter under the age of 40 and almost half over 50 years of age) is that many highly experienced nurses will be retiring soon, taking years of accumulated wisdom with them.5 The nurses who are currently serving as clinical preceptors and mentors will no longer be available to new graduates. What percentage of new graduates can a unit or service safely absorb at one time? 10? 25? 50? We worry that many hospitals will become living experiments in answering this question.

About the Authors

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Third, the complexity of patient care has increased exponentially in the past decade. In every issue of the American Journal of Critical Care, we document the increase in new technology and treatment. A nurse working in a critical care unit may need to monitor serum glucose levels and respiratory status in an acutely ill patient receiving mechanical ventilation while also managing 5 infusions and multiple changes in treatment, many of which were unknown a few years ago. A nurse working on a medical-surgical unit, with an assignment of 5 to 8 patients, is now caring for patients who a decade ago would have been in the intensive care unit. Shorter hospital stays, increasing acuity of patients, and an aging population are all converging to require that expert nursing knowledge be brought to the care of every patient. Patients are increasingly vulnerable and in need of expert nursing and medical care.

Solutions to Reduced Duty Hours for Residents

Hospitals that have relied on residents in the past to ensure continuity of patient care are just beginning to tackle the problem generated by limited duty hours. In the United Kingdom, the National Health Service funded a number of pilot studies to identify innovative ways of working with the reduced duty hours by changing the skill mix; for example, using nurse practitioners or administrative personnel, depending on the nature of the work, instead of physicians in training. Some of the pilot studies have included the following:

- the introduction of shifts by doctors in training;
- the performance of traditional physician resident tasks by other health care professionals; for example, the use of pharmacy technicians to manage medications or the use of a team of trauma and orthopedic nurse practitioners to provide a 24-hour trauma service;
- the increased use of nonmedical support workers;
- the increased use of fully trained doctors (known as "consultants" in the United Kingdom) at night;
- the development of new multidisciplinary clinical teams;
- the development of teams that can work across a number of specialties (referred to as "cross-cover") between the hours of 10 PM and 8 AM.6

Although the issues resulting from the residency hours legislation do not affect community hospitals in the United States that do not have residency programs, they do affect the experience that residents have during their training period. We predict that the restructuring of care in academic medical centers that is already occurring in response to reduced residency hours will lead to changes in all hospitals across the country as administrators and health professionals reconsider the appropriate allocation of work and the professional boundaries involved.

Solutions to Bridge the Education-Practice Gap in Nursing

General agreement exists that new graduates need additional education and training to deliver safe and effective patient care in an acute care environment. Graduate nurses usually enter a program designed to support them through the transition from student to practitioner. The programs may vary from 10 weeks to 1 year, but all involve a degree of orientation to the specific hospital's procedures, didactic material specific to the area of care, and supervised clinical practice focused on demonstrated competencies.

Such programs do not come cheaply. Besides the cost of the program itself, nurse executives factor in preceptor time and stress, the strain on staff who must back up new graduates in training, and the opportunity cost of not offering continuing education for experienced staff. Thus, this orientation program must be effective in maintaining retention of nursing staff.

Within the first year of employment, turnover of new graduate nurses ranges from 35% to 60%.7 This turnover results in a significant cost to the hospital and to the unit that has invested heavily in the individual new graduate. A nurse with less than 1 year of tenure represents the loss of approximately $40,000 in hiring and orientation costs.7 What can be done to minimize turnover?

A number of studies have been conducted to answer this question.7,10 The results are amazingly consistent. Retention of new graduates is related to better work environments where nurses experience colleagues (nurses and physicians particularly) to be supportive and cohesive and where the organization is viewed as supporting learning and providing necessary resources. Graduate nurses require relationships with mentors who will increase their sense of security and minimize their fear. Preceptors must be both expert clinicians and expert teachers, and they can make or break the orientation process by being hypercritical or uninterested.

Marlene Kramer11 wrote in 1974 about the problem of nurses experiencing “reality shock” when they first graduated. More than a quarter century later, the
same theme applies. Clinical care is difficult and requires adaptation to an intense work environment with care given around the clock 7 days a week. New graduates, whether from nursing or medical school, require talented and generous mentors to guide them to a level of competence and confidence that will ensure that they stay in the institution and the profession. It will be up to us whether or not these graduates learn by reflection and imitation as well as by experience. We hope it will not be bittersweet for them.

The statements and opinions contained in this editorial are solely those of the coeditors.

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REFERENCES

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