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PricewaterhouseCoopers’ Health Research Institute

What works*

Healing the healthcare staffing shortage

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Executive summary

Many nurses and physicians are among the baby boomers who will start to retire in the next three to five years. The federal government is predicting that by 2020, nurse and physician retirements will contribute to a shortage of approximately 24,000 doctors and nearly 1 million nurses. While hospital leaders voice much of the concern over possible shortages, the implications extend throughout the labor-intensive, trillion-dollar United States health system. It's expensive to educate new nurses and doctors. Taxpayer-funded Medicare spends $8 billion a year for residence training of physicians alone.[1]

While the U.S. has more physicians and nurses today than ever before, they are not distributed or deployed efficiently. Shortage projections tend to be built around today's often dysfunctional system, which makes them problematic. However, while future shortages are certainly worrisome, the bigger issue for health industry leaders today lies in orchestrating care in an increasingly complex and converging healthcare labor market.

Shortages, or even talk of shortages, can manipulate markets, creating problems for health industry executives who face the daily issues of recruiting and retaining the best talent. Yet because shortages have also been cyclical, short-term solutions have won out over long-term changes.

Seeking solutions means understanding that while the challenges confronting nurse and physician shortages are very different, their roles and futures are starting to converge. Healthcare is a team sport: a dozen or more types of physicians and nurses can be involved in a single patient's care, and the need for coordination and planning becomes more imperative and complex. It's not a matter of determining the mix of nurses and doctors to deliver efficient and effective care. Executives today must consider what kinds of nurses and doctors are needed, what tasks these clinicians are best educated to deliver, and how technology and lower-skilled workers can be used to supplement or replace them.

PricewaterhouseCoopers' (PwC) Health Research Institute (HRI) studied this evolving issue with the intent of providing a 360 degree view of current workforce challenges and providing a roadmap for a new, more sustainable workforce model.

Key findings

- **Use of temporary nurses is no longer a stop-gap measure but has become a way of life for many hospitals.** Reacting to several years of nurse vacancy rates in the 7% to 10% range, hospital executives surveyed said they use temp nurses for an average of 5% of all nursing hours. Meanwhile, nearly three-fourths of hospital executives surveyed said their physicians are asking for on-call pay, and two-thirds said some of their physicians want to be employed by them. This data bolsters the trend of nurses moving away from hospital employment and doctors moving toward it.
- **The process of educating and retaining new nurses is broken.** The number of denied applicants for nursing schools is at its highest ever, increasing more than sixfold since 2002. Turnover among newly hired hospital nurses is highest in the first two years.
- **Failure to retain nurses is costly and wasteful.** Every percentage point increase in nurse turnover costs an average hospital about $300,000 annually. Hospitals that perform poorly in nurse retention spend, on average, $3.6 million more than those with high retention rates.
- **Hospital leaders are in a state of denial about nurse dissatisfaction.** Hospital executives believe that the nurse workforce in general is dissatisfied, but not nurses in their own hospital. Hospital executives surveyed cited excessive administrative paperwork, patient workload strains due to rising patient acuity levels, and inadequate staffing as the top three factors for nurse dissatisfaction and turnovers. Inadequate compensation and disruptive physician behavior ranked fourth and fifth, respectively. However, hospital executives may be underestimating the effects of these factors because many of those surveyed failed to recognize these complaints as a "very significant" problem in their own organizations.
- **A new wave of medical schools could repair the inequity of physicians in underserved areas and specialties.** As more U.S. medical students graduate, they'll likely displace some international medical graduates who have been filling the gaps. After two decades of the status quo, a record number of new medical schools are slated to open in the next five to ten years, which could alter the future distribution of physicians.
- **Nursing education is stifled by perverse financial incentives.** While medical education receives significant federal subsidies, the same is not necessarily true for nursing. Nursing education programs often lose money for colleges, limiting colleges' willingness to expand their programs and raise faculty salaries.
- **The workforce is too often a second thought for executives, who are distracted by numerous payment and regulatory issues.** A significant disconnect exists between what hospital executives think about medical workforce shortages and how they address them. Three-fourths of hospital executives surveyed said workforce shortages are real. However, when asked to rank these shortages as a priority in their organizations, physician issues ranked sixth and nursing issues ranked seventh behind other priorities such as reimbursement, government regulations, clinical quality, and uncompensated care.

Future forces

These research findings indicate that the current medical workforce model is under great pressure and in many cases, is broken. There are also new forces on the horizon, however, to which healthcare organizations must be able to recognize and respond.

Nurse and physician roles are blurring in primary care, a specialty in which lower salaries have dissuaded debt-laden medical students. Three-fourths of hospital executives surveyed said hospitals are using more physician extenders, such as nurse practitioners and physician assistants, and more than half said they will use them in the future. Competition for these clinicians is increasing, particularly with the advent of retail clinics, which heavily employ physician extenders.

Rainmaker roles may change for hospitals. Employment changes and pay-for-performance reimbursement may combine to flip the workforce dynamic in hospitals. Traditionally, physicians were rainmakers who brought in revenue, and nurses were overhead. Through new, pay-for-performance programs that focus on clinical quality and patient satisfaction, nurses will have significant impact on the key metrics that will drive reimbursement updates.

Schedules trump salary. Organizations that focus on the work/life balance issues for physicians and nurses will have a competitive edge in recruiting and retaining top talent. Medical students say work/life balance is a top influencer of how they pick a specialty, and nurses say culture and schedules are the greatest influences on their job satisfaction.

Advances in specialization and technology are shifting what is done and by whom. From radiologists to cardiologists, to digital telemedicine and virtual colonoscopies, traditional roles and descriptions are morphing and shifting. This shift holds promise for increased efficiency but may cause disruption for certain specialties.

Recommendations

Given these key findings and future forces, PwC's Health Research Institute has developed a roadmap for a new workforce model based on the following recommendations:

Develop public-private partnerships. Widespread shortages have created an environment in which key healthcare players may no longer operate in silos. Rather, these groups must work collectively to promote nursing and physician programs, forging alliances to provide not only education but also required funding.

Encourage technology-driven training. Improving clinical outcomes requires the seamless coordination of treatment among all clinical professionals. Advances in technology have enabled caregivers to work in concert with one another, allowing the focus to remain on quality patient care. Providers, for their part, must maximize available technology and encourage the adoption of and adherence to technical innovations to increase the productivity of medical staff.

Design flexible roles. More than ever, physicians and nurses are placed in a stronger position to dictate the terms of their employment, and employers are increasingly finding that flexibility is central to attracting and retaining quality medical staff. The most successful employers will provide clinicians with options and integrate flexible work arrangements into their staffing models.

Establish performance-based metrics. Unlike other industries, healthcare has been able to delay the adoption of performance-based standards. Traditionally, reimbursement did not depend on quality or operational efficiency but rather only on the volume of services delivered. However, the landscape of reimbursement is evolving, with performance based metrics—such as clinical quality outcomes and patient satisfaction—as its centerpiece.

About the research

To provide research-based insight, HRI conducted more than 40 in-depth interviews with thought leaders and executives representing hospitals, academic associations, nursing schools, and the business community. PwC conducted a thorough literature review of reports and guidance from associations, regulators, and academia to gather insights on current challenges and best practices. Publicly available data was analyzed relating to workforce projections and demographics. PwC also commissioned a survey of more than 240 hospital executives from throughout the U.S. in the following categories:

- Chief Nursing Officer (CNO)
- Chief Medical Officer (CMO)
- Chief Executive Officer (CEO)
- Chief Financial Officer (CFO)
- Chief Operating Officer (COO)
- Vice President of Human Resources (VP-HR)

While this report focuses on nurses and physicians, they are not the only professional occupations affected by workforce shortages. Other occupations include imaging technicians, pharmacists, lab technicians, and patient-care assistants.[2] While the scope of this report does not allow full exploration of each area, there is some commonality of supply and demand drivers among the different fields.

To get the broadest possible input from PwC's network of business advisers, HRI employed an innovative tool called the PwC Thought-Wiki, which is based on similar technology that powers Wikipedia, an online encyclopedia. This tool incorporated a new level of collaborative authoring and knowledge sharing into HRI's content development. The Thought-Wiki enabled PwC health industry practitioners to contribute their real-world knowledge to the research, and it was especially helpful in capturing the collective intelligence of our clinicians.

HRI also enlisted the aid of PwC Saratoga, a service that focuses on teaming with executives and HR departments to help them measure, manage, and maximize the value of their workforce.

Background: Business and policy issues around the supply of nurses and physicians

Registered nurses (RNs) and licensed physicians are the arms and legs of the health industry, and it seems there are never enough. Three-fourths of hospital executives surveyed by HRI for this report said clinical workforce shortages are real. As the healthcare industry grows and now consumes 16% of the overall economy in the U.S., employment as a nurse or physician has delivered one of the most dependable paychecks around. The need for nurses and physicians in hospitals, nursing homes, health plans, pharmaceutical companies, home health agencies, and other health companies has exploded during the past 20 years.

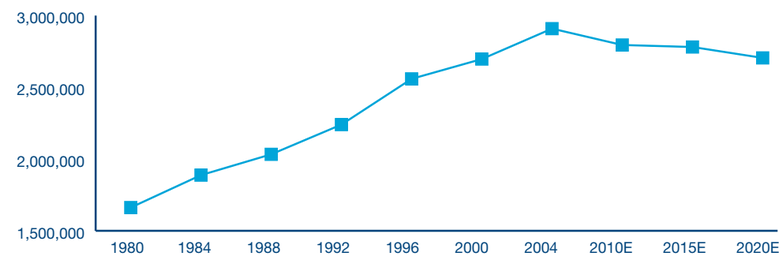
How many is enough? It's a difficult question to answer, considering the acknowledged inefficiencies of the system overall. In terms of global benchmarks, the U.S. has fewer nurses and physicians per capita than some other industrialized nations, yet it spends far more money per capita—twice as much as other industrialized countries—on healthcare. Would having more nurses and physicians raise costs even further? Would it increase quality? Would it make the system operate more effectively and efficiently?

Chronic nursing shortages may double after 2010

The total number of registered nurses has increased by 75% since 1980 (Figure 1). Talk of nursing shortages has waxed and waned for generations. In recent years, at least a dozen states have initiated studies about the shortage of nurses, and in some regions, chronic shortages appear to be growing. For example, the Regional Medical Center in Memphis, Tenn. reported in 2007 it was so short of staff that it had to resort to diverting patients to other hospitals—even women in full labor.[3]

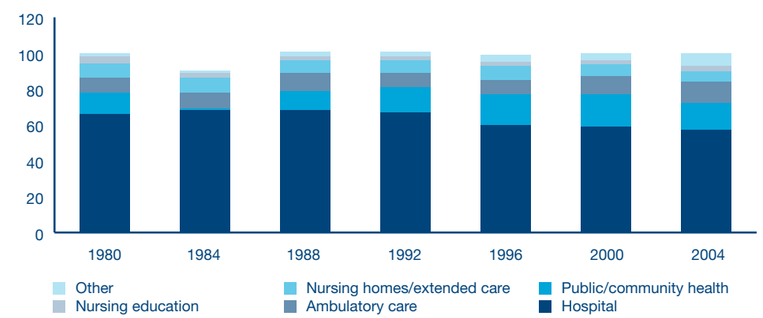
Since 1999, hospitals have been on a construction binge, heightening competition for nurses. Hospitals spent an estimated $30 billion on construction in 2006—a 30% increase in just one year—and 83% of hospitals report they plan to add capacity in the next two years.[4] In addition, Medicare's case mix index for inpatients started to rise again in 2001,[5] signaling sicker patients who need more care. This finding was supported by HRI's hospital executive survey that ranked increased patient acuity as a top reason for nurse dissatisfaction. Not surprisingly, registered nurse full-time equivalents (FTEs) per adjusted admission have been inching up after dropping during most of the 1990s.[6] The need for more nurses to work in hospitals grew. Although hospitals are the single largest employers of nurses, they are increasingly competing for talent with non-hospital organizations, such as ambulatory centers, physician practices, health insurers, and disease management companies. The percentage of nurses working in hospitals has been dropping steadily over time (Figure 2). Competition is expected to heat up even more with the advent of retail and work site clinics, staffed by nurses, nurse practitioners, and physician assistants. Over 300 of these clinics have opened, and another 1,200 are scheduled to open by 2009.[7]

Figure 1. Licensed RN supply (past and projected)



Source: Health Resources and Services Administration[8]

Figure 2. Percentage distribution of RNs by employer



Source: Health Resources and Services Administration[14]

In 2006, dire predictions about the shortage were tempered when policy makers observed a resurgence of students in their late 20s and early 30s going into nursing.[9] In addition to entering the workforce later than previous groups, those born in the 1970s are now entering the nursing profession in greater numbers than their previous cohorts did.[10]

Even so, the future trend looks troubling. For the first time in decades, the total number of nurses is projected to begin going down after 2010 (Figure 1). Nurses will start to retire at the same time that baby boomers begin turning 65 years of age and start using more care. Currently, forecasts for a registered nurse shortage in 2020 range from 400,000[11] to more than 1 million.[12] An important aspect of the shortage is that some 450,000 licensed nurses are not working at the bedside.[13] If by 2020 all registered nurses were to be clinically active and working, the shortage estimate for 2020 would decrease to just over 100,000, mirroring the shortage today.

Predictions about the nursing shortage could become more acute when coupled with new predictions

about an impending physician shortage. The prospect of clinical shortages among both physicians and nurses may be more than the industry can bear. “There exists a certain ecology in the healthcare industry. All of the pieces depend upon one another, but there is no incentive or structure to view it as a whole. We have a dysfunctional system that we’re trying to fix with silver bullets,” says Dr. Robert Templin, president of Northern Virginia Community College, one of the largest community colleges in the United States.

Forecasts of physician supply and demand are more ambiguous than for nursing

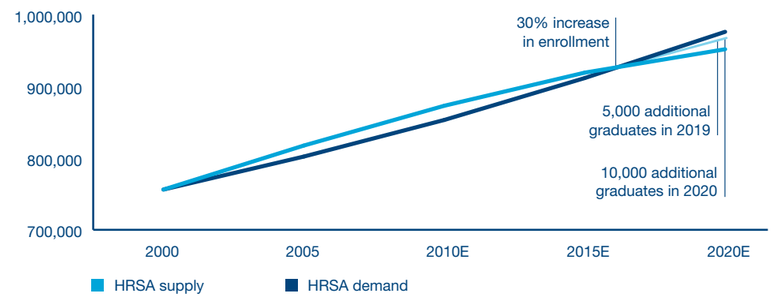
The basic demographic forces are the same for physicians as for nurses: an aging U.S. population demanding ever more care and en masse retirements of baby boomer physicians (currently one-third of all active physicians are over 55 years old).[15] As professionals on the high end of the income scale, physicians who have planned ahead financially may decide to retire earlier than nurses because they can afford to do so. As with nurses, the absolute number of physicians has increased steadily over the years, outpacing population growth.[16] However, the future is a bit murkier, complicated by specialization, geographic maldistribution, and blurring lines between primary care physicians and advanced-practice nurses. The best future strategy is another matter. In part, this may stem from studies showing that more nurses increase quality, but more physicians may add more cost.

Maldistribution of physicians by specialty and geography has existed for decades but is not easily solved by market forces. Factors influencing this are differences in pay, lifestyle, culture, uncompensated care, and risk of liability.

Across all specialties, the Health Resources and Services Administration (HRSA) predicts a net shortage of 24,300 physicians by 2020 using a base or continuation case (Figure 3).[17] The federal agency also modeled other scenarios that included productivity improvements and increased use of nurse extenders. Under those scenarios, a surplus was predicted.

A wide range of opinions exist about the adequacy of future physician supply. At the high end is Richard Cooper, M.D., professor of medicine at

Figure 3. Active physicians: projected supply and demand



Source: Health Resources and Services Administration and PricewaterwaterhouseCoopers’ Health Research Institute analysis[20]

Leonard Davis Institute of Health Economics of the School of Medicine at the University of Pennsylvania, who predicts a shortage of up to 200,000 physicians by 2020.[18] At the low end are those who argue that the main problem is one of efficiency and distribution rather than absolute supply. The medical practice variation research started by John E. Wennberg, M.D., director of the Center for the Evaluative Clinical Services at Dartmouth College, and continued by others, has shown that there is no correlation between greater physician supply (after a requisite threshold is reached) and better clinical outcomes. There are still significant medical practice variations unexplained by population or disease characteristics. In fact, areas with higher numbers of physicians do not necessarily improve patient outcomes, but they do increase costs.[19]

A recent population-based study demonstrated lower mortality rates where there are more primary care physicians, but no such effect with the supply of other specialists.[21] Another recent study found great variation between academic medical centers in terms of physician labor inputs used in caring for matched Medicare beneficiary cohorts in the last six months of life.[22] That is, there were differences in efficiency. This data supports the idea that absolute supply of physicians is an insufficient variable for understanding the “shortage” problem.

International recruitment has filled the gaps but isn't viewed as a sustainable solution

Nurses have been emigrating to the U.S. for many years, especially from Canada and the Philippines. By 2000, 11% of all U.S. nurses were international nursing graduates (INGs).[23] By 2005, 13% of all newly licensed nurses were INGs.[24]

The percentages can be much higher for an individual facility or geographic area. Martha Smith, former assistant chief nursing officer at Laredo Medical Center in Texas and currently CNO at Park Plaza Hospital and Medical Center in Houston, described how the situation can be different when located along the U.S.-Mexican border. "We occasionally reach full capacity and sometimes cannot open ICU [intensive-care unit] beds. We actively recruit international nurses—now 25% of our staff—and I have personally made two recruiting trips to the Philippines."

In terms of the physician workforce, international medical graduates (IMGs) made up 25% of all physicians in practice and 26% of new graduate physicians entering post-graduate training in 2005 in the U.S.[25] [26] Graduates of U.S. medical schools are virtually guaranteed a residency slot to continue their education to become licensed physicians. However, when there aren't enough U.S. grads, those slots, typically in primary care, go to IMGs. Of the approximately 6,500 IMGs entering U.S. residency training in 2005, about three-quarters went into first-year primary care residency positions. These IMG residents accounted for 42% of all internal medicine slots, 37% of all family medicine slots, and 24% of all pediatric slots.[27]

However, only 23% of hospitals surveyed by HRI said they had actively recruited foreign graduates. In addition, according to the HRI survey, only 18% of hospitals surveyed said recruitment of foreign nurses and doctors was a desirable strategy to combat future shortages.

Critics say the quality of non-U.S. medical schools is highly variable, and that concern is one of the reasons the Association of American Medical Colleges (AAMC) has called for an increase in the size of U.S. allopathic medical school classes and for new schools to be developed. While some foreign medical schools are accredited by recognized accrediting agencies, many have no accreditation or accreditation with standards appreciably different than those dictated by the Liaison Committee for Medical Education (LCME), which accredits U.S. and Canadian allopathic schools.

For example, the quality of this training is illustrated in the passage rates on the U.S. Medical Licensing Examination (USMLE). Passage rates for first-time test-takers on the 2006 USMLE Step 2 examination—which reflects four-year medical education—were 96% for LCME-accredited medical graduates and 77% for IMGs; for repeat test-takers, these percentages were 72% and 50%, respectively.

Today's LCME-accredited allopathic medical schools in the U.S. reflect both the art and the science of becoming and practicing as a physician, which goes beyond the licensing exam scores. A new emphasis on effective communication, empathy, and understanding the implications of patient discussions is embedded into the curriculum. It is clear that physicians must be able to both communicate effectively and to artfully incorporate quantitative and qualitative information into patient care.

Personal story. Code Red in California

Rakesh likes the excitement and job flexibility of the emergency department, where he can work as much or as little as he wants by picking the shifts he wants to work. "I really like the work because I don't know what to expect. In the emergency room there are times that can be mundane and times that can be really exciting. It keeps me on my toes, and I see a variety of patients."

His career

Tenure	5 years as emergency room attending physician and emergency medical service liaison
Educational financing	Scholarships and loans
% of time in direct patient care	95%

"My career in medicine stemmed from my interest in the subject matter along with my past experiences as a volunteer in the emergency department and as a lifeguard."

The profession

"Medicine has given me a great deal. I have really gotten a lot out of it and have met some great people. I find a lot of doctors complaining and frustrated, but I feel this profession is a privilege. Doctors in many countries do not make as much money as they do in the U.S., but they are passionate about it." Rakesh's other thoughts about the profession:

- People are not always aware of their own health
- The emergency department concept can be abused, especially because access to primary care can be limited
- Too little preventive care. "The emergency department really sees the effects of this. We fix the short-term problem, but long term; their health is not going in the right direction."

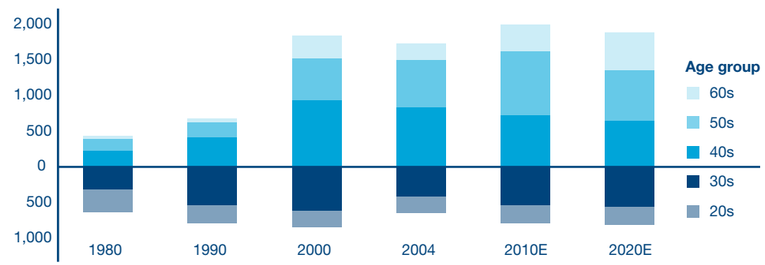
Nurses: More than 41,000 qualified nursing applicants were denied admission to nursing school (undergraduate and graduate programs) in 2005.[28] This represents a sixfold increase since 2002.

High vacancy rates and continuous turnover of staff are stressing the financial and cultural fabric of healthcare providers.[29] It is telling that nearly half of all nurses do not work in direct patient care, and that a growing number of physicians are retiring early.

"We have an aging workforce and inadequate numbers of new nurses coming into the pipeline," says Ann Hendrich, RN, M.S.N., FAAN, vice president of clinical excellence operations at Ascension Health System. "Staffing demands at current levels are difficult. When you couple that with the new construction under way, it's not a gap but a crevasse that will make it very difficult to avoid shortfalls in access, patient safety, and service" (Figure 4).

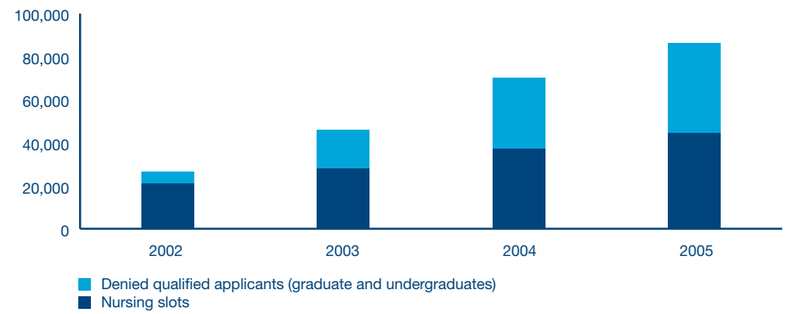
How large that gap will become in the short-term depends, in part, on educating new nurses. In 2006, hospitals nationally reported an 8.5% nurse vacancy rate, according to the American Hospital Association.[31] After multiple drops in enrollment in the mid- to late-1990s, nursing enrollment began increasing again in 2001. In fact, enrollments increased at double-digit rates during the past three years. However, there's been

Figure 4. Distribution of RN workforce by age group (thousands)



Source: American Hospital Association[30]

Figure 5. Nursing slots vs. denied applicants



Source: American Association of Colleges of Nursing[32]

even faster growth in the number of applicants turned away (Figure 5).

A shortage of qualified nursing faculty is most commonly blamed for the bottleneck. As nursing shortages began to appear, salaries began to increase (Figure 6). However, faculty salaries haven't kept pace, so college administrators say they can't hire sufficient faculty to expand their programs. Yet other factors are at play here. Nursing education programs are expensive. Brian Foley, acting provost of the Medical Education Campus of Northern Virginia Community College, states: "We lose $8,000 per year for every nurse we train." Understandably, public colleges aren't anxious to expand such programs. Their tuition rates are set by the state, meaning they can't simply pass on the higher costs to students. Faculty often find they can earn higher salaries outside of academia. As a result, those who are qualified to teach often don't. The average nursing faculty age is higher than the average age of the overall nursing population, and the future of the nursing education system will experience significant problems as these instructors retire.

Another problem for colleges is the scarcity of clinical training sites. Overburdened hospital departments and staffs are often reluctant to take on the additional task of teaching students. Some are asking for payment, thereby adding to a college's educational

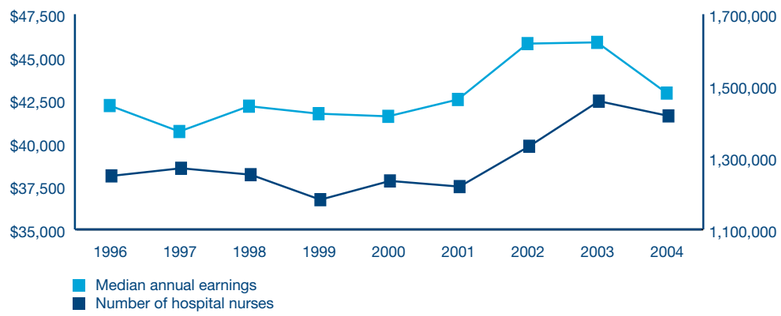
costs. “New [clinical sites] are not coming on line fast enough,” says Templin. “Allocation and utilization of space are archaic. The system is dysfunctional, with individual organizations and departments often taking a parochial view rather than a system approach.” Compounding the problem is the fact that hospitals do not receive federal funding for training nurses as they do for medical graduates.

Physicians: The number of medical school graduates has remained relatively static over the past 25 years.[34] The Association of American Medical Colleges has called for a 30% increase in medical school slots to meet shortages forecast by 2020.[35]

The dynamics of the physician pipeline are different, but they culminate in similar talk of future shortages. The total supply of physicians has steadily increased every year since the 1970s (Figure 7). A 1980 report from the Graduate Medical Education National Advisory Commission forecasted a surplus of at least 70,000 physicians by 1990, a prediction that was widely accepted and a key factor in limiting growth in the number of medical school slots.[36]

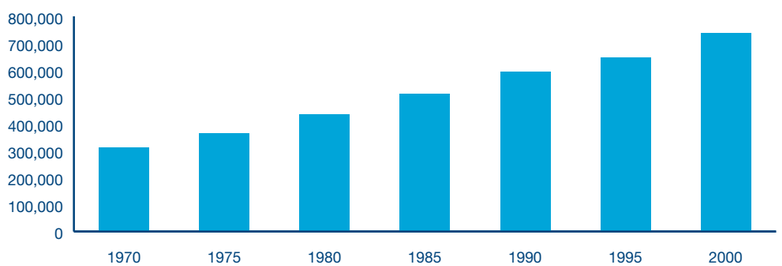
Even into the 1990s, physician workforce models assumed that significant changes in practice patterns would be wrought by the advent of managed care—that is a greater reliance on primary care and more efficiency in general.

Figure 6. Hospital nurses' inflation-adjusted median annual earnings and number of hospital nurses



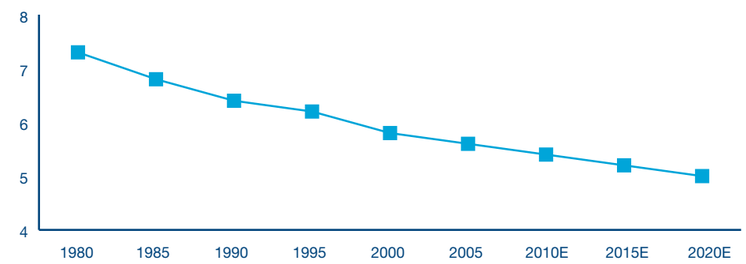
Source: Institute of Women’s Policy Research and PricewaterwaterhouseCoopers’ Health Research Institute analysis[33]

Figure 7. Number of active physicians



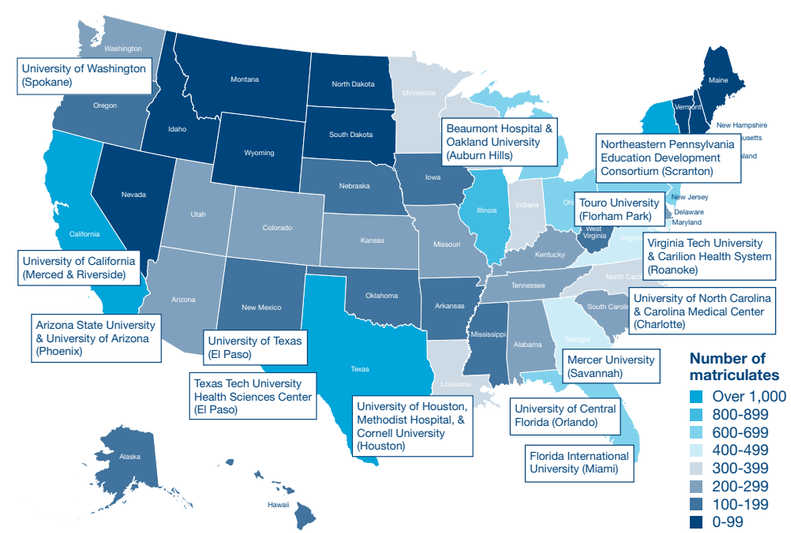
Source: Bureau of Health Professions[37]

Figure 8. First-year MD enrollment per 100,000 population



Source: Association of American Medical Colleges[39]

Figure 9. Medical school enrollments & forecasted medical school additions by state, 2006



Source: Association of American Medical Colleges and PricewaterwaterhouseCoopers’ Health Research Institute analysis[41]

Atul Grover, M.D., Ph.D., associate director of the Center for Workforce Studies of the AAMC, explains: “We based everything on assumptions that the system would change. We believed that managed care was going to sweep the country, that it was going to be embraced by physicians and patients alike. We’d all love it. It didn’t happen.”

As a result, the number of medical schools (125) and slots in U.S. allopathic education has remained relatively stable for more than a decade. Even as the population grew, fewer students per capital were entering medical school (Figure 8).[38]

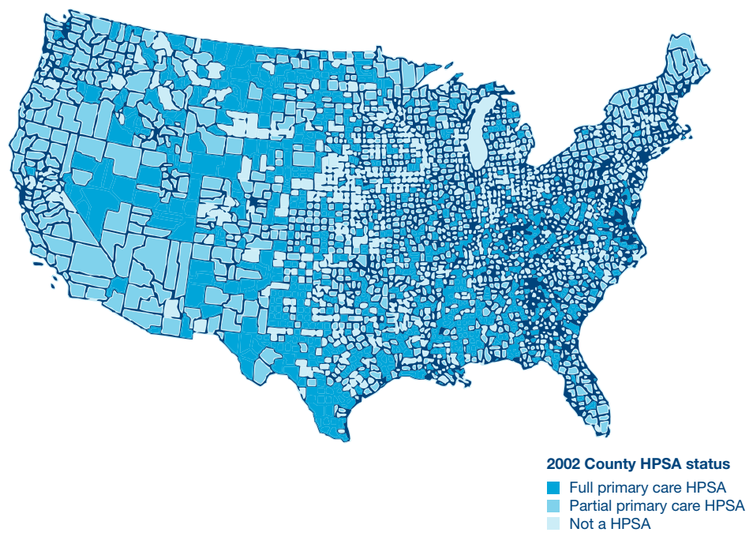
The dynamics of medical school enrollment are now starting to change. The first new school in 20 years—Florida State University College of Medicine—graduated its first class of students in 2005.[40] More schools are under development (Figure 9). Most of the new schools will be built in areas with high population growth, and graduates tend to locate near where they are trained.

While there are still plenty of applicants (2.2 applicants for every slot) seeking entry to this very long training pipeline, the number of medical school slots has been relatively static for many years. As in nursing, there are worries about older doctors retiring and seniors needing more care after 2010. Recognizing the long pipeline to build schools

and the number of years required to educate and train doctors, the AAMC in 2005 called for a 15% increase in medical school slots and then one year later doubled that call to a 30% increase.[42]

Among those interviewed, opinions differed on physician shortages. Certainly there are geographic and specialty gaps, such as in neurosurgery and in hospital-based specialties, such as radiology, anesthesiology, and pathology. And there's always been regional maldistribution of physicians. For example, Massachusetts has twice as many physicians per capita as Mississippi, and 20% of Americans live in a primary medical care shortage area, as designated by HRSA (Figure 10).[43] [44] The National Health Service Corps is designed to address shortages through tuition reimbursement incentives, but it has been regarded as chronically underfunded. Students recruited from underserved areas are more apt to return to those areas and practice. Such students are more likely to be from minority groups, yet blacks and Hispanics still constitute only 4% each of the physician workforce, with similar ratios seen in nursing.[45]

Figure 10. Primary care health professional shortage areas



Source: American Academy of Family Physicians[46]

Personal story. Frontier medicine

Kate works in Presidio County, Texas, one of the largest and poorest counties in the U.S. "If you live in a frontier area, you better not get sick. There are hardships just to get the basic needs met. If the one ambulance is out on a run, you have to improvise. Many people are born here, and they don't want to leave or can't afford to leave. This is a place where you have to drive three hours just to get your teeth cleaned."

Tenure	9 years as RN, 11 as nurse practitioner
Educational financing	Loans
% of time in direct patient care	80%

Her career

"I decided to become a nurse practitioner because I was fed up with the system. Nursing has struggled to be a scientific profession because of the basic nursing process of not diagnosing or treating but following a nursing care plan. That was too limiting, and I felt like I was always working with my hands tied."

The profession

"We need to have clinicians collaborate more as teams and clearly define the different jobs and roles. Nurses often shoot themselves in the foot by not differentiating between the different levels of education that prepare you for different jobs. But most important, we need to change the whole system and get everyone access." Kate's other thoughts about the profession:

- Professional nurses should have a minimum of a bachelor's degree
- International medical graduates are essential to rural areas; they are incredibly motivated and highly trained
- She gets frustrated with physicians who do not have a holistic approach to health

The erosion of interest in primary care, however, remains the most critical problem. The number of U.S. medical graduates choosing the primary care specialties of family medicine and general internal medicine has plummeted 50% in the past 10 years.[47] Only 20% of internal medicine residents now choose general internal medicine—that is, primary care instead of a (higher paying) subspecialty.[48] The American Academy of Family Physicians has called for a 39% increase in family medicine physicians based on its assessment of future need.[49] A major unknown factor in any forecast of primary care physician need is the extent to which sub-specialists provide or will provide primary care services within their own practice.

Physicians and Nurses: Financial pressures influence education, career paths, and staffing.

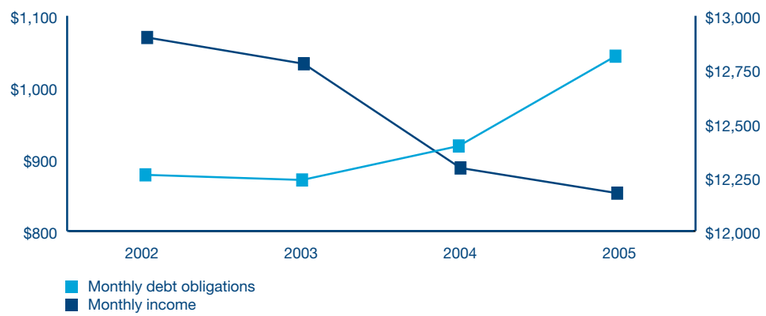
While many enter medicine for altruistic reasons, most students also look at receiving a return on their investment. The erosion of students going into primary care may be linked to salaries that haven't kept pace with the rising cost of education (Figure 11). The average educational indebtedness for 2006 medical school graduates (including pre-med borrowing) has ballooned to approximately $130,000.[50] In 2006, the average debt of graduating medical students increased by 8.5% compared to the previous year.[51]

As debt reaches higher levels, there is a greater influence on specialty choice.[52] Graduates self-report that other factors drive their specialty choice.[53]

While pay ranks third as a nurse satisfier—behind working conditions and scheduling—a rough correlation has been demonstrated between nurse pay levels and numbers of nurses in the workforce.[55] Nurse shortages result in the use of agency nurses at a higher rate of pay. To minimize agency staffing and ensure coverage and viability over time, executives are addressing pay issues for nursing staff (Figure 12).

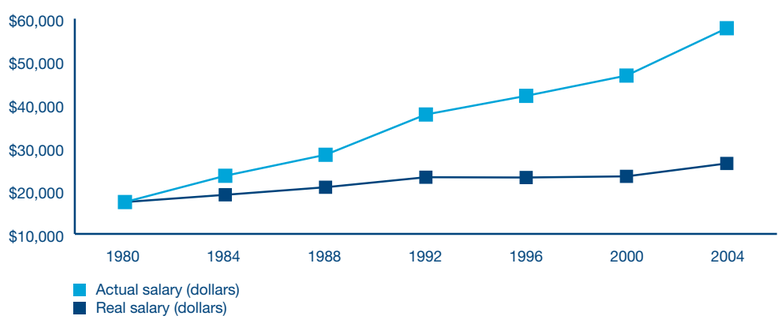
Physicians are more frequently demanding on-call levels of compensation or are opting out of emergency department and trauma coverage completely. They are also increasingly seeking employment arrangements. This data demonstrates the growing desire of younger generations for work/life balance as well as a means of ensuring adequate compensation, which tracks closely to overall workforce trends.

Figure 11. Monthy physician debt obligations vs. monthly income (before taxes)



Source: American Association of Medical Colleges and PricewaterwaterhouseCoopers' Health Research Institute analysis[54]

Figure 12. Actual and real average annual salaries of full-time RNs



Source: Health Resources and Services Administration[56]

Personal story. The lure of specialty medicine

Specialists like to be on the cutting edge, taking care of complicated cases. Daksha's career started in academia to be closer to the research and specialized equipment, but volumes were not high enough. "The academic life was good, but there was not enough work specific to my practice."

Tenure	25 years as ob-gyn; 4 years as reproductive endocrinologist
Education financing	Personal financing
% of time in direct patient care	80%

Her career

"I want to help diagnose and treat people with rare medical disorders — or at least support them when I cannot treat them. I like the challenge." Daksha treats problems related to the reproductive system, such as hormonal disorders, menstrual problems, pregnancy loss, infertility, and menopause.

The profession

"I think that with the advancement of technology, physicians must be more proactive about learning." Daksha's other thoughts about the profession:

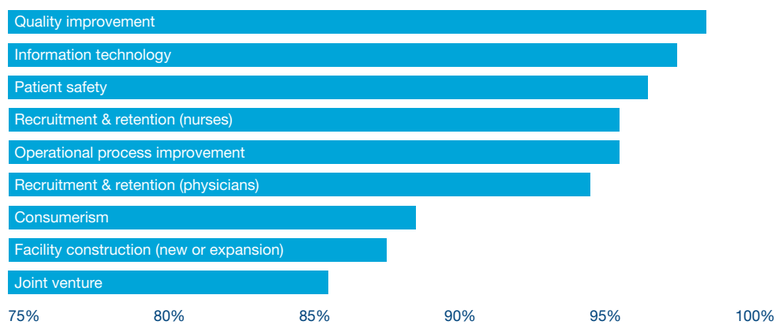
- Dealing with insurance companies can be frustrating
- Sometimes current insurance guidelines do not meet the clinical needs of patients

In the sub-specialty arena, some physicians are challenged with rising costs and uncompensated care. As a result, some obstetrician/gynecologists have dropped obstetrics; some physicians have moved to states with liability caps; and some are seeking additional reimbursement through states and other sources. James F. Caldas, president of Washington Hospital Center in Washington, D.C., says, "We operate in a very challenging market for healthcare—one that is particularly harsh for obstetricians. In response to the skyrocketing malpractice premiums, many of the private practice obstetricians in this market have left the District of Columbia because they simply could not afford the exorbitant cost of insurance. We have excellent obstetric coverage at our hospital only because we employ the physicians directly."

Hospital executives also voiced concern around other specialties—such as neurosurgery, general surgery, and orthopedics—for coverage in the emergency department. The risk of liability and uncompensated care has become so great in some areas that it is difficult for hospitals to find such coverage. This is aggravated by rising utilization and diminished capacity in emergency departments nationally.[57] These phenomena will drive geographic and specialty distribution, perhaps even drastically in the future.

Regulation can impact shortages. For example, in California in 2004, the legislature mandated nurse staffing ratios in hospitals. The vast majority of hospitals had been in compliance with the ratios prior to the law, but those that weren't had to scramble to comply. Unfortunately, the mandate was not accompanied by any initiatives to enhance the number of graduates through additional educational funding or other mechanisms. As a result, many hospitals contracted with agency nurses at higher expense, or they eliminated other staff, such as patient care assistants, to pay for additional nurses. Rick Martin, senior vice president of patient care services and CNO at Hoag Hospital in Newport Beach, Calif. says: "While our facility absorbed the costs of maintaining our pool of nursing assistants in the face of the mandated ratios, many facilities did not. The cost burden of these mandates will increase, and the situation will deteriorate further when the statutory ratio for telemetry units increases from 1:5 to 1:4. This change will further aggravate the nursing shortage and staffing challenge faced by many providers."

Figure 13. Involvement with initiatives (all respondents)



Source: PricewaterhouseCoopers' Health Research Institute Survey[58]

Overcoming the disconnect

After several years of nursing vacancies that ranged from 7% to 10%, hospital executives have learned to sustain operations by supplementing with temporary nurses as necessary. As the workforce shortage continues to grow, the number of supplemental RNs and licensed practical nurses is projected to grow 57% by 2012.[59] According to the HRI survey, hospitals are using temps to supplement about 5% of nursing work hours on average, resulting in a low vacancy rate. Depending on the organizational culture, executives may perceive this scenario as a sustainable solution.

Hospital executives are experiencing initiative overload. Recruitment and retention initiatives must compete with many other hospital priorities according to an HRI survey of hospital executives (Figure 13).

According to the survey, workforce issues are prioritized lower than all other complex issues except for managed care contracting (Figure 14). This disconnect seems to indicate that hospital executives do not yet fully appreciate the impact of workforce issues on other strategic initiatives. Consideration of the availability of financial resources as an input to planning is commonplace; however, human capital is not always given the same consideration. Failure to consider human resource constraints can lead to faulty planning and an inability to implement key strategies. In addition, hospital executives are not aligned regarding prioritization. CNOs and vice presidents of nursing and human resources prioritize nurse staffing and clinical quality higher than do hospital CEOs, CFOs, and COOs (Figure 15).

In addition, nursing leaders point to serious fractures in the system. One study showed that 40% of U.S. hospital nurses reported job dissatisfaction, and more than 43% demonstrated high levels of burnout.[62] Nearly 23% of U.S. nurses said they planned to leave their current job within the next year.[63] For nurses under 30 years of age, that figure was 33%.[64] Almost 55% would not recommend the profession as a career choice.[65] A commonly heard phrase is "love nursing, hate the job."

Many hospitals are recognizing a need for change in the care model involving both nurses and physicians. Of the hospital executives surveyed by HRI for this report, one in three said they were in the process of implementing new nursing models.

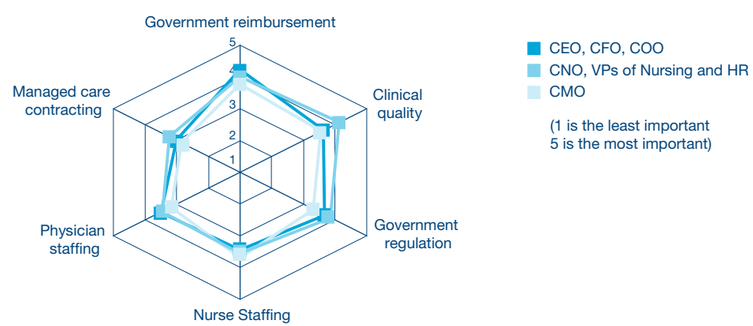
Many nurses graduate but do not pursue nursing as a career. Of those who do, half leave their first employer after two years (Figure 16). This can indicate several things: nurse education programs are not properly preparing students regarding what to expect on the job; organizations are hiring nurses into an inflexible model that doesn't accommodate what young nurses want to put into and get out of nursing; and the problems that create dissatisfaction among nurses aren't being addressed sufficiently by hospital leadership.

Figure 14. Hospital executive rankings of hospital issues/priorities

Ranks	Overall rank
Reimbursement from government payers	1
Clinical quality	2
Government regulations	3
Reimbursement from commercial payers	4
Uncompensated care	5
Nurse staffing - general or speciality	6
Physician staffing - general or speciality	7
Managed care contracting	8

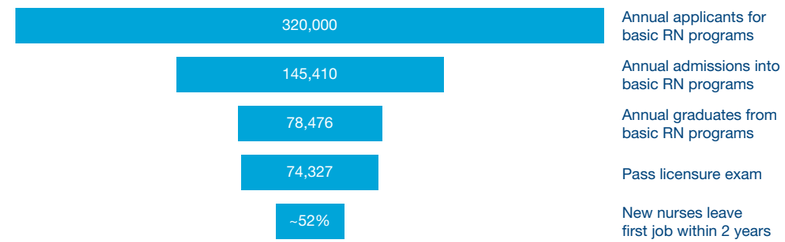
Source: PricewaterhouseCoopers' Health Research Institute Survey[60]

Figure 15. Prioritization of complex issues among healthcare organizations



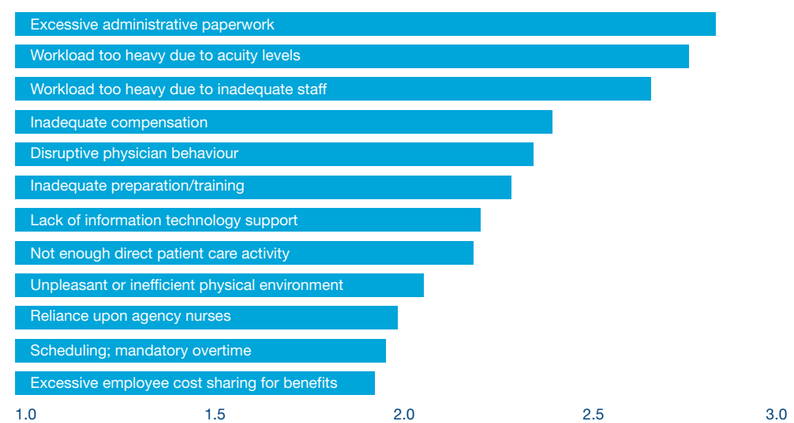
Source: PricewaterhouseCoopers' Health Research Institute Survey[61]

Figure 16. The system is leaky



Source: National League for Nursing and PricewaterwaterhouseCoopers' Health Research Institute analysis[66]

Figure 17. Factors for nurse dissatisfaction/turnover



Source: PricewaterhouseCoopers' Health Research Institute Survey[67]

The HRI survey showed a disconnect on nurse dissatisfaction. When asked about common factors that drive dissatisfaction, hospital executives surveyed said none of those were a major factor in their organizations (Figure 17).

Any future nursing model should address the primary dissatisfiers that drive nurses out of the workforce today. Many of the features may be grouped under the heading of professional autonomy but also include aspects of practice standards and technical infrastructure. Taken as a whole, they describe a more highly trained, effective, and autonomous profession.

Strategies for developing a workforce model for the future

Our research indicates that healthcare organizations need to design a sustainable workforce model that incorporates solutions from training to retaining. To this end, PwC has developed four key strategies—detailed in the following pages—that assist in providing a blueprint for an improved medical workforce model.

Develop public-private partnerships

In many regions, providers and educators have banded together in various ways to address the nurse and physician shortages through private and public funding, loaner instructors, promotional campaigns, flexible work-study programs for advanced degrees, and leadership interventions that promote the value of nursing and teaching. Community outreach programs to high schools and even middle schools can influence students at a young age. The Robert Wood Johnson Foundation campaign was cited by many interviewees as having a positive impact on the image of nurses, as well as providing scholarships. Innovative curricular approaches are being tested to speed up the educational timeline.

Better communication between healthcare organizations and key stakeholders such as government entities, schools, and the business community is critical. Dual appointments can inject more clinical faculty into the teaching environment, dominated now by an aging faculty often long removed from the bedside. Some states are providing loan forgiveness for nursing students who pursue graduate education and later teach nursing undergraduates in state schools. For example, Tennessee launched a $1.4 million public/private partnership in which approximately $1 million was provided by the healthcare industry.[69]

A number of states have entered into the Nursing Licensure Compact (NLC), which allows a nurse to have a license in one state and to practice in another compact state—subject to that state's practice law and regulation.[70] These agreements allow for more rapid transfer of licensed nurses across geographic areas, whether to respond to changing demand for nursing services or to react in times of crisis or natural disaster.

In terms of physicians, the medical schools now on the drawing board reflect strong regional partnerships directed at local needs. Physicians often prefer to practice near their residencies. Because of the drought in new medical schools over the last two decades, regions with high population growth have not had a corresponding increase in medical grads. That's changing, thanks to efforts in high-growth states such as Florida and Texas, where there's also a shortage of Hispanic physicians.

Another leading model that addresses underserved areas is in Washington, Wyoming, Alaska, Montana, and Idaho, where the medical school in Washington draws on remote training sites in the respective states for medical students.[71] This arrangement is viewed as more economical than building new medical schools, and it addresses two basic issues: offering educational opportunity to students in states without medical schools and placing trainees in underserved areas, thereby increasing the chance they will practice there. Oregon, Kentucky, and other state medical schools are expanding remote placement of trainees to this same end.

Recommendations

Collaborate across a region. Educational institutions, health systems, and businesses must work together to develop and implement incentives—such as flexible scheduling, loan forgiveness or stipends, and faculty-specific benefits—to entice nurses into faculty positions. Consideration should also be given to ease the transfer of resources within a region, particularly as it relates to licensure requirements.

Seek understanding. Building good partnerships requires that partners spend time learning to understand each other and acknowledge each other's priorities and how they work on a day-to-day basis. Bringing together all of the stakeholders who share in the risks and rewards of this issue is foundational—and can be challenging. Parties may want to bring in outside facilitators in regions with a history of competition or conflict. The payoff for these efforts could be long-term sustainability of the entire regional system.

Operationalize the strategy. Recognize that effective and sustainable partnerships need to work at both the strategic and operational levels. To provide the desired results, all high-level planning and strategy needs to be followed by comprehensive and focused plans to operationalize the strategy and achieve the vision. High-level planning needs to be backed up by sound operational effectiveness and solid execution.

Adapt as needed. Continuously review and monitor the partnership and results to ensure that the collaboration remains focused on the vision and is achieving its desired mission. This may mean changing tack where it appears appropriate, adapting to changes in the marketplace, and evolving with regulatory and other changes. All parties should work together to ensure that the education and certification requirements are adapting to the changing clinical environment.

Measure results. Assess the initial starting point as the collaboration commences, and develop periodic measurements to monitor progress and results achieved. Establishing effective and data-driven performance measures for the partnership will help ensure that the vision is achieved and allow for adjustments to be made as necessary.

Case study. Northern Virginia Healthcare Workforce Alliance

Northern Virginia, which includes some of the nation's fastest growing counties, created the Northern Virginia Health Care Workforce Alliance (the Alliance) to facilitate a response to the growing shortage of healthcare personnel. The Alliance comprises providers, businesses, academic institutions, economic development agencies, workforce investment, and community leaders.[72] Alliance leaders say the effort was one of the first times the problem has been addressed by a broad range of involved parties.

To date, the Alliance has helped obtain $1.2 million from the state to enhance educational capacity, and those funds are being matched by local hospitals and health systems. In addition, the Alliance facilitated a $1.2 million grant from the U.S. Department of Labor for training imaging personnel. Northern Virginia Community College, as a result, has expanded its educational programs to reach new graduation goals for 2009. The Alliance also is developing a method to quantitatively measure its success in producing new graduates and reducing the clinician shortage.

In healthcare, as in most industries, it is rare for competitors to collaborate. However, in this case, leaders from local health systems, the business community, high schools, community colleges, and universities came together to address the intertwined problems and solutions contributing to the shortage, such as credentialing and clinical training sites. Many of the Alliance members also now serve on the Governor's Health Reform Commission, sharing their knowledge with other portions of the commonwealth.

The group's first goals included obtaining objective, quantifiable information on current and future workforce challenges, identifying gaps in the current healthcare workforce, and seeking proven best practices to close the gaps. The Alliance studied the regional market to understand the dynamics, including population trends, economic factors, educational levels of the population, current and future healthcare delivery changes including construction and expansion, and diversity of the workforce. A primary trend was the high cost of short-term incentives. Providers had been aggressive in confronting the staffing challenges; however, the costs inherent to this action were deemed unsustainable over time.

The Alliance also noted that while the region faced demographic challenges common to other areas, unique regional characteristics compounded the problem. For example, the region has high economic growth, a highly educated population, low unemployment, a high cost of living, and a diverse and immigrant population that is not currently reflected in the workforce.[73]

Based on the research, the Alliance developed solutions that:

- Recognize the impact of shortages on the region's long-term economic and business costs
- Acknowledge the need to tap into the diverse immigrant population in the area
- Develop leading retention practices, such as career ladders
- Partner with area employers, the educational system, and businesses to introduce healthcare careers to young students

Encourage technology-based training

While there has been some innovation in the educational environment for nurses and physicians over the years, progress has not kept pace with technology. The transfer of clinical knowledge and cognition is generally excellent, but the skills required to thrive in the new world of healthcare are not always being imparted effectively. Graduates need to be prepared for that world via relevant learning experiences and technology.

Patient simulators can provide clinical training scenarios that mimic a particular patient pathology by using computer simulation monitoring systems that track clinician performance grades against institutionally established best practices. Remote distance learning can be used to expand educational programs to underserved areas. Interdisciplinary models and role playing can be used in the clinical years of training to foster teamwork, communication, mutual respect, and partnership on such initiatives as clinical quality and patient safety. Clinical expertise of nurses, pharmacists, nutritionists, and respiratory therapists must be brought to the bedside as shared resources in concert with physicians' work, as opposed to each specialty functioning in separate silos. Consumerism created demand for a medical workforce educated in the basics of customer focus and how to respond to the increasingly informed patient. "Hospitals that have responded to that consumer mind-set have reaped the rewards of increased patient satisfaction," indicates William Powanda, vice president of Griffin Health Services, a Derby, CT based hospital system.

Recommendations

Integrate technology into new educational models. New technology, such as patient simulators, allows students to practice with various clinical scenarios and develop their diagnosis and treatment skills. This can result in greater accuracy and increase exposure to varied clinical encounters, leading to improved outcomes.

Embrace consumerism. Virtual role playing should be developed and incorporated into the curriculum and used as a means for students to gain practice in communicating with both patients and other practitioners. It will help students improve their bedside manner, adopt transparency for dealing with increasingly educated patients and colleagues, and learn and utilize effective collaboration skills. These efforts will improve their confidence when they encounter similar experiences in the clinical setting.

Make information technology competency a requirement. Nurses should accept technology as a means to become more effective and efficient with non-patient care duties. Through the use of electronic medical records and Web-based tools, paper documentation is minimized, transparency is increased, turnaround times can be decreased, and continuity of care becomes a more seamless process. In order to be of utmost value, however, technology applications must be fully embraced and integrated. Efforts to educate and involve the clinical staff in implementation can improve acceptance of these new technologies.

Case study. Nursing education meets the starship enterprise

Traditionally, nursing schools have relied on used medical equipment donated by hospitals and the didactic teaching techniques associated with a typical classroom-style education program. Today, nursing education leaders are pushing for change. Elizabeth Poster, dean at the University of Texas at Arlington School of Nursing (UTASN) says: "We can't just do the same thing forever and expect to have different outcomes. The traditional education that we've all seen over the last hundred years needs to change."

UTASN is one of the largest nursing schools in the U.S. and graduates close to 200 B.S.N. students annually with a 99% pass rate on the National Council Licensure Examination for Registered Nurses (NCLEX). The school is now in phase two of a three-phase Smart Hospital development. When completed, it will include more than 100,000 square feet and 60 beds of teaching space. The Smart Hospital is a laboratory of virtual learning and simulation that leverages technology to supplement faculty. In effect, technology becomes a faculty extender. "We are moving away from the 'I lecture, you listen, I test by paper and pencil' approach. By getting the students more comfortable with the psychomotor skills first, which we can do in simulation, then the hours we do spend in the hospital are much more productive hours. After simulation training, they really can hit the ground running, and they can be more perceptive to patient and staff needs," says Beth Mancini, University of Texas at Arlington associate nursing dean.

The Smart Hospital features:

- Full-body patient simulators that include infant, child, adult
- Birthing mannequins and high-fidelity mannequins that replicate physiology functions
- Virtual intravenous devices
- Simulation software to conduct realistic scenarios and role-playing activities
- Monitoring and recording equipment that enables multiple simulations and what-if scenarios for faculty review and evaluation as well as time and motion studies

But can technology and simulation increase the supply and help nurses re-enter the workforce? It is estimated that approximately 500,000 nurses aren't working in the profession.[74] Mancini says yes: "There are nurses out there in the community that aren't working in hospitals, and we want them back. So we need to help them acquire the knowledge and skills they need in a manner that fits their schedules and prepares them to work at the bedside. Can we put them in our Smart Hospital and give them the competencies they need? Absolutely—not a problem."

Poster concludes: "Simulation and computerized mannequins give the faculty more control over what students see and experience, so when they graduate they're more confident and more competent. This can significantly change the learning timeline when, for example, in the hospital setting, instead of having an internship for six months or a year and costing $45,000 to $70,000, maybe that doesn't need to happen anymore."

Design flexible roles

Lifestyle, not salary, is a top reason that medical students cite for selecting their specialty, according to the 2006 Medical School Graduation Questionnaire published by the AAMC.[75] Even today's physicians are choosing better work/life balance; studies show that physicians are working fewer hours on average than in the past. Beverly Jordan, vice president and CNO at Baptist Memorial Health Care Corp. in Memphis, Tenn. relates a conversation she had with a second-generation physician who recently completed training: "This young doctor indicated: 'My dad prided himself on how many hours he worked. When I was growing up, my father didn't know whether I had a bike. I want to teach my children to ride theirs.' "

Dr. Cary Sennett, senior vice president of strategy and communications at the American Board of Internal Medicine (ABIM), relates the story of a student who says: "I really appreciate Mother Teresa, but that's not me." Sennett says that students are weighing the debt burden and lifestyle issues. "Students look at the value equation of how much am I going to earn versus how much out of my hide?"

Employment models for physicians and nurses are changing as more physicians are asking hospitals to employ them—at least part-time. "Systems more and more have to supplement a physician's income [that is, paying for on-call hours]," says Leisa Maddoux, vice president of operations at Centura Health in Denver. "With a shortage of certain specialists, physicians are unwilling to take days and days on call. Emergency department coverage is difficult because doctors don't want to expose themselves to significantly high levels of uncompensated care."

Technology is changing job descriptions for physicians as well as nurses, creating the need for flexibility. Radiologists are now doing some of the work that cardiologists did, utilizing diagnostic computerized tomography scans of the coronary arteries instead of invasive angiography. Likewise, cardiologists are replacing surgeons in some procedures as more people choose less invasive treatments, such as stents, to address coronary bypass concerns. Interventional radiologists treat cerebral aneurysms, which was once the domain of neurosurgeons. Virtual colonoscopies may eliminate the invasive procedure as now performed by gastroenterologists. Digital telemedicine is allowing X-rays to be read overnight in India, psychotherapy to be conducted remotely, and mammograms to be screened automatically through digital scanning. This explosion of technology applications holds not only the promise of more efficient and more effectively distributed care but also the potential for significant disruption for certain medical specialties.

Tools that can reduce non-patient care duties for nurses can improve efficiency and satisfaction when coupled with process improvements. The goal is to use technology effectively and maximize patient care time. As nurses adopt technology, there is "a reduced time of shift change and in turn increased face time with the patient," says Pam Hudson, vice president of Kaiser Permanente HealthConnect™. "The patient experiences warmer hand-offs between nurses, and the nurses experience improved work/life balance with reduced overtime. Patients are more involved in their care as they are able to view their chart and lab information on in-room monitors." The primary functional areas where IT tools can be implemented for best effect are:

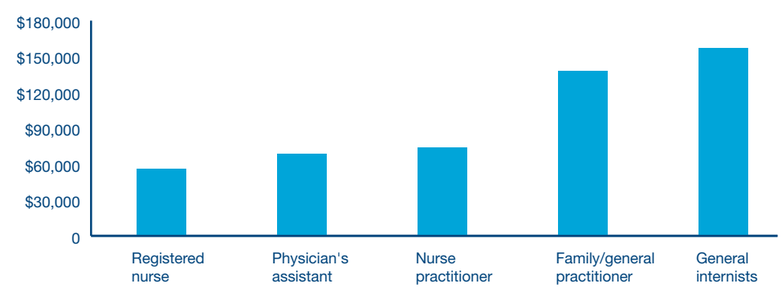
- Documentation, such as bedside wireless transmission to monitors and electronic medical records
- Medication administration, such as computerized physician order entry, bar coding, and robotic delivery
- Location and retrieval of patients, supplies and equipment—such as bar coding, radio frequency identification, and electronic patient progression tracking
- Communications, such as one-and-done calls: immediate responses from attending physician versus making multiple calls

With opportunities for clinicians to work with ambulatory centers, health plans, and pharmaceutical companies, hospitals must find their competitive edge. "Nurses leave because of cultural issues: they are leaving the culture of the organization," says Lillee Gelinas, vice president and CNO of VHA Inc. "Money is the number one attractor, but the number one retention and employee engagement factor is state of the culture." Some hospitals have responded by using internal registries and other tools that help nurses feel more in control of their work and personal schedules. As more physicians seek employment, the same issues facing nurse retention may become an issue for physician retention.

Many view the prospect of advanced practice nurses and physician assistants as filling or supplementing primary care roles at a lower salary cost and training rate (Figure 19). "Given the ever-growing expectations for preventive services and chronic disease management, it may not be humanly possible for primary care physicians to do all that we are asking of them. There are ways that practices can be organized and leveraged that could increase efficiency, but most physicians aren't used to thinking about how to manage work flow and optimize systems for patient care," says ABIM's Sennett.

The potential for non-physician substitution by extenders or other types of healthcare practitioners can provide a boost for clinical productivity. On one hand, physicians may have to rely increasingly on collaborative work with advanced nurse practitioners.[77] On the other hand, convenient and widespread diagnostic and therapeutic technology increases consumer demand, putting further pressure on the workforce.

Figure 19. Comparison on 2004 salaries



Source: Bureau of Labor Statistics and PricewaterwaterhouseCoopers' Health Research Institute analysis[76]

Technology advances may yield new delivery models as well. "Delivering care from a distance is a model that will come. We can argue about the timing, but it will materialize," predicts Robert Pearl, M.D., executive director and CEO of the nation's largest medical group, the Permanente Medical Group. "Our 6,000 physicians all utilize electronic communications with their patients. As an example, patients can send their physicians a secure e-mail with a question related to a problem that is not a medical emergency. The physician can respond later that day, and the information is available anywhere the patient has Internet access. As a result, medical care is provided in a way that is convenient for both the patient and the doctor. Additionally, in Kaiser Permanente, patients can request prescription refills, schedule appointments, and review their laboratory results online 24 hours a day, seven days a week. This approach is optimal in organizations that are prepaid for their services, but over time, all payment models will need to recognize this service to facilitate widespread adoption."

Recommendations

Develop a range of physician compensation models. As physicians become more closely aligned with hospitals and look to hospitals as employers, hospitals need to develop compensation options that reward them for performance. These models need to integrate new payment triggers to compensate for performance, quality, and integrated care. The models also may need to be customized for physicians in different specialties and in different stages of their careers.

Personalize scheduling. Shift bidding is an Internet-based program used by hospitals to fill open shifts. The system works by allowing nurses to bid on open shifts; the nurse who places the lowest bid on a shift, with the bid amount still greater than normal wages, wins the shift. Shift bidding was originally created as a means to enhance or supplement nurse scheduling methods but has evolved into a primary-shift scheduling program, as it can be tailored to fit hospital policies and procedures.[78] The costs associated with a shift-bidding system are generally lower than with temporary staffing agencies and provide a greater amount of efficiency. As an added benefit, the shift-bidding system can increase nurse autonomy while boosting overall employee morale. Many hospitals have reported an increase in retention as a result of utilizing the shift-bidding system. St. Peters Hospital in Albany, New York, has been using a shift-bidding system since 2001 and claims a savings of more than $1.7 million and a drop in nurse vacancy rate from 11% to 5%. Spartanburg Regional Healthcare System in South Carolina reports that shift bidding has dropped its nurse vacancy rate from 20% to 7%. Use of this system has enabled Spartanburg Regional to cut nurse outsourcing by more than 90%, resulting in a savings of $10,000 to $20,000 per week.[79] Such efficiencies are prompting some hospitals to provide incentives for employees to use the bidding system, such as early payment to those employees who schedule their shifts through the Web-based system. Additionally, organizations should consider other flexible staffing options, including job sharing, offering options to retired or retiring staff, unique shift opportunities, and other innovations.

Use internal registries and eliminate supplemental staffing. Internal registries function similar to a hospital owned and operated staffing agency, in that the hospital creates the registry's policies and procedures and has complete control over its wages and benefits. These registries allow hospitals to effectively react to a range of variables that require additional staff—such as coverage during vacation and sick time, leaves of absence, and bed openings—without having to depend on an external staffing agency. With an internal registry, a hospital can eliminate supplemental agency fees and instead pay competitive wages to the registry employees while still ensuring a savings.[80] Temporary staffing can harm staff cohesion. An Institute of Medicine study reports that increased use of agency nurses is associated with a lack of continuity of care and creates vulnerability to quality problems and discontent on the part of physicians and nurses who must work with temporary staff unfamiliar with the work setting. This in turn causes disruption in a team culture.[81] Temporary nurses are often compensated at higher levels, with the basic per-diem mark-up ranging from 25% to 40% above the average employee's wage. This translates into $250,000 to $400,000 that the hospital is paying just for an agency's service and overhead costs for every $1 million spent on supplemental staffing.[82]

Consider going through the Magnet Recognition® Program process. The journey toward this certification provides valuable process improvements for hospitals. The Magnet Recognition Program, developed by the American Nurses Credentialing Center (ANCC) to recognize healthcare organizations that provide nursing excellence, has certified 242 nursing organizations.[83] While the credential itself may be effective in recruiting nurses, interviewees said that the process toward Magnet status was beneficial in forcing the organization to examine its structure and processes relevant to the nursing workforce. Given the significant cost of obtaining the designation, each hospital should weigh the cost and benefit individually. The management interventions tied to Magnet status can have a positive impact on nurse satisfaction and retention. Features of recognized hospitals are shared governance; focus on supervisory effectiveness; scheduling innovation; performance measurement and feedback; quality improvement; and interdisciplinary working relationships. The creation of a Magnet culture also has been shown to improve patient quality outcomes.[84]

Measure the organizational fit. Some hospitals are using tools that gauge an applicant's fit. Dr. Rosemary Luquire, former senior vice president and chief nursing and quality officer at St. Luke's Episcopal Health System in Houston and current senior vice president and CNO at Baylor Health Care System in Dallas, says: "Our utilization of an organizational-fit hiring model, which helps ensure a good match with nursing in general as well as specialty areas, has proved to be of great value to our system. Our success was obvious during the first 18 months following implementation as our turnover rates dropped significantly." Even prior to employment, clinical preceptorships can bond trainees to the organization.

Think ergonomics. Ergonomic designs regarding the physical demands of lifting, other risks of injury, excessive walking or standing, and inadequate visual display are understood to be significant factors in retaining workforce, especially for those who are aging. Don Stubbs, vice president of human resources and risk management at St. Joseph/Candler Health System in Savannah, Georgia, summarizes the challenges: "As the population and our patients continue to get heavier and heavier, we're developing ways to deal with these issues. We're currently just over a year into a project where we have provided user-friendly lifting and handling equipment to assist nurses with patient care. We recently had a patient for whom staff needed equipment just to lift the individual's leg, which weighed over 120 pounds. We cannot expect our nurses to meet this need without assistance."

Walk the walk. Setting the tone at the top can change the culture of an organization. Thomas E. Fitz Jr., FACHE, is president and CEO of St. Mary's Health Care in Athens, Georgia, a facility that has received repeated recognition for quality and was named 2006 Large Hospital of the Year by the Georgia Alliance of Community Hospitals. He summarizes the philosophy they employ: "We have intentionally created a culture at St. Mary's. People understand they are going to work hard here, but they enjoy working here. We have borrowed the motto from Southwest Airlines: 'Now hiring hardworking, fun-loving individuals who want to make a difference.' This philosophy has paid off for us in many ways, including significant improvements in retention. In one department, we had 75% annual turnover just a few years ago; that department now has a waiting list." The changes did not take place immediately and required many innovative actions. They included:

- Implementation of a dedicated and structured leadership training program for all management staff
- Committed transparency, including frequent communications and bulletin boards on every unit with financial, quality, and staffing metrics
- Daily stand-up meetings in the CEO's office, where all executives meet each day for a very short period to allow for immediate action on priority issues

Personal story. Quality of life

Like many clinicians, Laurie made her career moves based on her ability to balance family needs with work schedules and career advancement. "I have taken pay cuts to work in a private practice setting and in a utilization and case management role. At one point, I left the hospital to go work in private practice for a cardiologist. I had two young children and wanted more predictable hours. I am motivated by family, and that means more to me than money."

Tenure	25 years as RN (8 in private practice; rest as case manager and informaticist)
Education financing	Loans
% of time in direct patient care	63%

Her career

"I was kind of pushed into nursing by my family. My stepmother and four of my sisters are nurses. There were loan forgiveness programs when I went to school, and this played heavily in my career decision. When I began my career, it seemed to be more patient centered than it is today. Many times people now seem to be more motivated by 'What's in it for me?'"

The profession

"Our profession is very data driven. My job as a clinical informaticist is to perform clinical and quality reporting for our hospital facilities. I supervise the CMS quality indicator reporting." Laurie's other thoughts about the profession:

- Nursing is a great profession because you can work anywhere in the country
- She gets frustrated by physicians with big egos

Establish performance-based metrics

Beauty is in the eye of the beholder, and quality is viewed through the eyes of the patient. Quality is increasingly becoming the driver behind pay-for-performance reimbursement by Medicare and commercial health plans. Quality is being measured by clinical outcomes, process metrics, and patient satisfaction. Nurses are about three times more numerous than physicians and are key links in the quality chain, ensuring that routine procedures are performed correctly, patients are monitored, data are recorded, medications are delivered correctly, and patients are comforted in their daily needs.

Understanding the link between care givers and patient satisfaction is critical for earning bonuses under new pay-for-performance methodologies, says William Powanda, vice president of Griffin Health Services Corp. Griffin is also the parent organization of Planetree, a 125-hospital organization committed to humanizing, personalizing, and demystifying the hospital experience by creating healing environments and engaging patients in their care treatment and well-being. Griffin is the only hospital named by Fortune magazine as one of the 100 Best Companies to Work For for eight consecutive years. "We have adopted the philosophy that providing information for patients allows them to participate in their healthcare in ways that will improve their outcomes and satisfaction. We provide information for patients about their medical problem and the treatment and care they will receive in a number of ways, including diagnosis-specific patient pathways. We allow patients full access to their medical records, tests, and any information that may benefit them. The model is attractive to patients and staff. Our patients and staff are more satisfied. We have become the hospital of choice for the community served, and our attractiveness as an employer is extremely high, with over 7,200 applicants for our 160 open positions last year."

Beginning in 2008, the federal government plans to publish patient satisfaction scores on individual hospitals. More than half of the patient satisfaction survey focuses on the quality of care provided by nurses and physicians. Questions include, "During this hospital stay, how often did nurses treat you with courtesy and respect?" and "During this stay, how often did the hospital staff do everything they could to help you with your pain?"

Voluntary collection of the patient satisfaction data began in October 2006, and results are expected to be published on the Centers for Medicare & Medicaid Services (CMS) web site in early 2008. The reporting is part of Medicare's broad pay-for-performance quality initiative. Hospitals must participate if they want to receive the full-market basket update for fiscal 2008. Those that fail to participate will receive the update minus 2.0 percentage points. This could slice a hospital's reimbursement increase in half, since the market basket update has been around 4% in the past few years. Hospitals must submit a pledge form in the summer of 2007 stating their intention to participate. In an interesting twist, the Medicare Payment Advisory Commission, the agency that advises Congress on Medicare policy and payment, has recommended that the government reduce some of the funding for physician training to pay for the quality initiative.

"We have found that a stable nursing workforce with experience at the facility as well as with specific patient populations combined with good communications with the physicians leads to high quality," says Dr. David Pryor, senior vice president of clinical excellence at Ascension Health. "The data is clear to us. There is a component of communication and teamwork that must be present in the environment in order to provide high-quality care and retain staff. Nurses are providing frontline care, and nurse turnover is directly related to effective communication on the floor." Nurse satisfaction leads to staff stability, which leads to improved clinical and financial outcomes. On a daily operational level, nurse shortages can lead to disruptions of operating room scheduling, diversions, and bed closures, all of which have a direct impact on physicians. Of course, physician staffing gaps can themselves lead to these problems. Nursing and medicine have too often operated in functional silos, but they are in fact closely linked, as will become more evident in the future.

Hospital employee turnover has been correlated with a higher adjusted mortality index and severity-adjusted average length of stay, as well as a higher cost per discharge.[85] Patients in hospitals with high RN staffing levels (75th percentile) had lower rates of five adverse patient outcomes: urinary tract infections, pneumonia, shock, upper gastrointestinal bleeding, and longer hospital stay,[86] according to a study by the Agency for Healthcare Research and Quality. Hospitals with high RN staffing had surgical patients with lower rates of two adverse outcomes: urinary tract infections and failure to rescue.[87] Additional studies have shown that increasing the proportion of RNs, in particular, could be the most cost-effective way for hospitals to reduce the risk of adverse outcomes.

Patient satisfaction reports also may unveil problems in nursing supply. According to Hoag Hospital's CNO Rick Martin: "The nursing shortage does not get the attention it needs from the public nor from the politicians or educational systems; it seems to be undervalued. The public is not feeling the pain yet; they will start to feel it when they notice the nursing shortage impact on the medical/surgical units, diversions from the emergency department, and surgery cancellations."

Optimizing talent and investment

Healthcare executives want to know how to become more productive, work smarter, and ensure sustainability and success over time. As we have demonstrated, various problems within the healthcare workplace are creating significant dissatisfaction that is pushing nurses out of the workforce prematurely and harming the productivity and cohesion of those who remain. Recent nursing and hospital turnover data illustrate the magnitude of this phenomenon.

A metric, such as human capital return on investment that focuses on financial measures, is relatively ill defined in healthcare where the output related to return on investment is, ideally, healthier patients. In recent years, the use of facility- and system-level dashboards and scorecards has increased. Progressive organizations are ensuring that metrics surrounding human capital get measured, get reported, and receive high-level attention similar to the traditional financial indicators that facilities have measured for years. Given that labor costs consume approximately 49% of the total organizational costs for most hospitals, and that an estimated 30% of hospital employees are registered nurses, key measurements surrounding the nurse population should be adopted.[88] [89]

The majority of nurse turnover occurs in the first years of service (Figure 20). VHA's CNO Gelinas seconds this notion: "Nurses are leaving jobs after only 24 to 36 months. They're saying, 'This is not what I bargained for.' The problem is that most hospitals just aren't great places to work." The spread for this metric between the best- and worst-performing organizations is large, indicating substantial improvement opportunities. Perhaps this finding is not surprising, but it does reinforce the need for innovative retention efforts focused

Figure 20. Selected hospital turnover metrics

Metric name	N	10th	25th	Median	75th	90th
Overall nurse voluntary separation rate	22	5.5%	7.0%	8.4%	10.5%	17.1%
% nurse voluntary turnover 1st yr of svc	23	13.0%	20.8%	27.1%	34.3%	40.7%
% nurse voluntary turnover 1- 3 yrs of svc	22	18.4%	21.0%	28.1%	32.8%	37.2%
Voluntary separation rate (healthcare)	54	7.5%	9.1%	10.7%	13.6%	17.6%

Source: PricewaterhouseCoopers Saratoga[90]

on newer employees, including taking steps to ensure that appropriate organizational fit and hiring decisions are made in the first place.

Nurses who quit carry significant costs to their organizations—costs that may be difficult to fully quantify. A comprehensive cost estimate would include the following:

- Recruiting, advertising and placement
- Learning and education
- Human resources costs (new hires, recruiting agency, etc.)
- Training
- Additional overtime/pressures on remaining staff
- Agency costs during vacancy
- Opportunity costs (delays in expansion, diversions, etc.)
- Lost team cohesion/productivity
- Quality

The total cost related to the loss of a nurse can equate to as much as two times the annual salary of that nurse.[91] HRI estimates that reduction in turnover can save an illustrative hospital up to $3.6 million annually. Based on an average hospital of 350 full-time-equivalent nurses, every percent in increased nurse turnover costs an average hospital about $300,000 annually (Figure 21).

Figure 21. Cost of nurse turnover for low-performing hospitals

Hospital nurse turnover performance	Lowest 10%	Lowest 25%	Median	Top 25%	Top 10%
Nurse turnover rate	17.1%	10.5%	8.4%	7%	5.5%
Annual cost of turnover	5.4M	3.3M	2.6M	2.2M	1.7M

Source: PricewaterhouseCoopers' Health Research Institute[92]

Recommendations

Incentivize teamwork. Recognition should be given to the improved outcomes achieved when teams are experienced and familiar, work together collaboratively and share common incentives centered on efficiency, quality, and performance. Entities should examine their reward structures to ensure that the incentives are aligned to allow for increased chances of achieving the desired results. Given the fundamental role of physicians, specific consideration should be given to aligning physician incentives with enterprise incentives through the use of various collaborative models—including gain sharing, co-management, and integrated and joint venture models.[93]

Recognize the evolving incentives. As payment is affected by patient satisfaction, any problems within the workforce will become not only more visible but also financially detrimental to the unprepared organization. In addition to the financial incentives, participation in Medicare's patient satisfaction initiative gives a hospital the opportunity to identify areas of weakness in terms of care delivery and the stability, satisfaction, and competence of its workforce. As part of that, organizations should be proactive in collecting—for both nurses and physicians—clinical data related to quality. Effectively implementing pay-for-performance models can result in overall process improvement, better quality outcomes, higher levels of patient satisfaction, and fewer medical and administrative errors.

Connect quality outcomes to compensation. Organizations should identify and monitor the impact of their nursing shortage on patient outcomes and implement the appropriate strategies. Clinical outcomes can be improved with optimal nurse supply—specifically, by increasing the proportion of RNs. Formally recognizing nurses as an integral part of the quality chain and integrating the nursing staff in leadership of quality initiatives as well as linking compensation and performance can yield synergy. Those organizations that are recognized for outstanding quality will attract high-performing staff and physicians.

Set benchmarks. Leading-edge organizations are measuring their human resources capital metrics along with their financial metrics, recognizing the costs associated with poor and ineffective staffing practices. Consideration should be given to the evolving implications for credit ratings as well as the significant costs (both realized and opportunity) associated with poor staffing practices.

Personal story. A higher calling

For some, healthcare is truly a calling. Ralph and Doris run a family practice as physician and head nurse, respectively. While they view healthcare as their ministry of service, they are increasingly concerned with the amount of administration and paperwork. "There is a sense of fulfillment when treating patients and working with people. I love the human touch and seeking some way to make patients smile."

The career

Tenure	30 years as physician/nurse team
Education financing	Medical school loans
% of time in direct patient care	75%

"I started as an engineer but never felt it was the right career, so I switched colleges and careers and started medical school," says Ralph.

Doris adds, "I love building the patient interaction and building the practice as the head nurse."

The profession

"There is far too much time spent on paperwork, documentation, and protections from lawsuits. Preauthorization from insurers for drugs and tests creates a burden as well." Ralph and Doris's other thoughts about the profession:

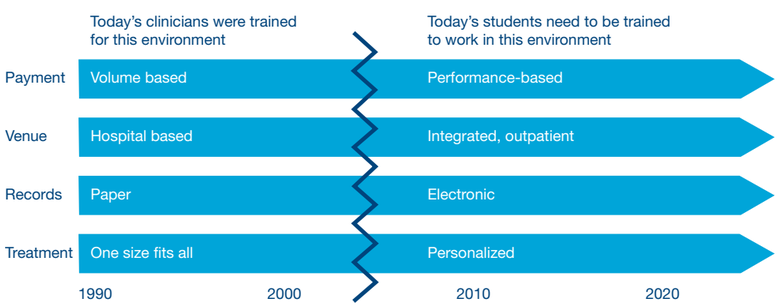
- Many doctors in the region do not take Medicaid because of poor reimbursement
- They spend too much time on tasks that aren't reimbursed by insurers and the government

Conclusion

Despite the amazing advances in medical diagnostic and therapeutic capability, the model for the education and practice of nurses and physicians has not changed much in the last 50 years. There is very little technology used in the process of care. The management revolution that has swept over American business and industry during that era has—to a large degree—bypassed the healthcare workplaces. Healthcare organizations must embrace the many known effective strategies for helping people work individually and as teams. This can be achieved through shared governance, established and transparent performance metrics in key areas, incentive alignment across teams with gain sharing for all, and unified mission without functional silos. The tools are available but must be implemented through focused leadership that can look beyond day-to-day pressures and toward a future vision.

Moving from today's workforce model to the future will be disruptive to staff and the organization; however, as the industry changes, a health system or organization must change with it (Figure 22).

Figure 22. Transitioning from today's workforce to tomorrow's will be disruptive



Source: PricewaterhouseCoopers' Health Research Institute[94]

When hospital executives surveyed by HRI were asked which situations would be most likely to "get their attention," hospital CEOs ranked revenue shortfalls and decline or loss of profitability as first and second, respectively, while CMOs and CNOs chose accreditation jeopardized and bed closures due to staffing shortages as their top picks. There is clearly a significant disconnect between hospital CEOs and clinician executives around prioritization of organizational strategy and resources. Ultimately, if clinicians want to gain stature in the hospital and public policy hierarchy, they will need to convince CEOs and other decision-makers that medical workforce issues are crucial for our health system's success. After all, this is an industry running on people power.

Appendix

Appendix A. Retention enhancement practices

Common practice	Best practice	Leading practice
Standard shift assignments (shifts assigned based on a set of factors)	Flexible scheduling (flexibility worked into scheduling to meet specific hospital and personal needs)	Web-based shift-bidding (nurses able to request shifts through online programs)
Ignore workplace ergonomics (little thought put into design of workstations)	Correct ergonomic design (facility conveniences, such as ergonomic equipment, implemented to make work environment more functional for nurses)	Personalized ergonomics (conveniences beyond ergonomic equipment; facility conveniences that support daily functions)
Top-down management (traditional, low-staff-involvement model)	Staff involvement (still top driven but more staff involvement)	Shared governance (staff involved in decision-making process)
Non-merit-based compensation (job-specific compensation)	Merit-based compensation (individual achievement taken into account)	Rewards based on achieved results (performance metrics such as quality outcomes and achieving goals taken into account)
Tolerance of abuse (abuse of nurses by physicians)	Policy and procedure in place and well communicated (issues not ignored; policies on abuse written and staff made aware)	Decisive executive action taken when necessary (consistent enforcement of processes to deal with negative behaviors)
Continuous quality improvement (CQI) handled through separate quality improvement (QI) unit (no integration; CQI operates as separate silo)	Nurse involvement with CQI initiatives (nurses getting involved with quality improvement)	Nurse-led CQI initiatives (clinical staff driving quality initiatives)
Longevity not rewarded with compensation (no reward for tenure)	Seniority rewarded with compensation (compensation incentive to stay with the same organization)	Retirement plans structured to reward long tenure (plans designed to incentivize staff to stay with the organization until retirement)
Fragmented IT initiatives with inadequate change management (recognition of technology but no process change)	Fragmented IT initiatives with adequate change management (recognition that underlying processes must change to utilize technology)	Fully integrated IT deployment with excellent change management (full recognition of process change and improvement)

B. Global migration of health professionals

As New York Times columnist Thomas Friedman wrote in his best-selling book, we are living in a "flat world."[95] The free flow of capital and information is leveling the global playing field. Similarly, the flow of people is impacting the worldwide healthcare marketplace in new ways. The United States, the United Kingdom, Canada, and Australia are the largest importers of international nurses and physicians. With international medical graduates (IMGs) making up 23% to 28% of their physicians, IMGs have become an integral component of the workforce in the four countries. Language, cultural, and training gaps can make the transition to U.S. healthcare difficult, but many U.S. hospitals overcome this through structured cultural transition programs.

While the international migration of physicians and nurses is a long-standing aspect of globalization, new concerns are being raised about the brain drain on exporting countries with their own tenuous healthcare systems. While there is significant migration among the four biggest recipient countries (except that out-migration from the U.S. is virtually nil), the largest percentage of IMGs originate from lower-income countries. For the U.S., 60.2% of IMGs come from lower-income countries; for the United Kingdom (UK), 75.2%; for Canada (CA), 43.4%; and for Australia (AU), 40%.

The top 12 source countries of IMGs practicing in US/UK/CA/AU are India, the Philippines, Pakistan, the UK, Egypt, China, South Africa, Germany, Mexico, Ireland, South Korea, and Nigeria. India and Pakistan together account for more than half of the total IMGs supplied by the top 12 "exporters." However, some of these countries don't have enough clinicians to treat their own populations. For example, the World Health Organization recommends a minimum density for physicians is 20 per every 100,000 people, and for nurses, 500 per every 100,000[96] (Figures 23 and 24).

Figure 23. RNs per 100,000 by host/source country

Host countries	RNs/ 100,000	Physicians/ 100,000	Life expectancy (M/F)	Source countries	RNs/ 100,000	Physicians/ 100,000	Life expectancy (M/F)
Australia	941	247	78/83	South Africa	472	77	47/49
United Kingdom	847	230	76/81	Philippines	418	58	65/72
New Zealand	841	237	77/82	Zimbabwe	129	16	37/34
Ireland	804	279	75/81	China	99	106	
United States	782	256	75/80	Nigeria	66	28	45/46
Canada	741	214	78/83	India	45	60	61/63
				Pakistan	34	74	62/63

Source: United Nations Development Programme[97]

One of the basic concepts employed to understand the dynamics of nurse and physician migration is the "push/pull factor."[99] Source country conditions such as inadequate resources, poor pay, lack of safety, and political oppression may act to "push" professionals to emigrate. Once a shortage develops, a vicious cycle is created because those who are left are overworked and may want to leave as well.

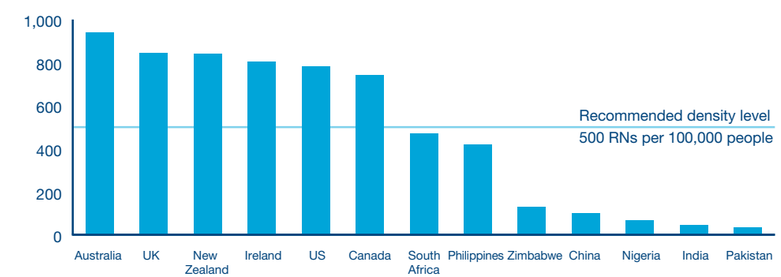
Migrants are also "pulled" to developed countries by various attractions such as modern medical environments, better pay, career-advancement opportunities, physical safety, and political freedom. Industrialized nations, with ample medical infrastructure and higher pay, have become magnets for physicians and nurses from poorer nations, leaving many of the workforce donor nations with increasing shortages. For example, 29% of Ghana's physicians are working abroad. Ghana lost 382 nurses to emigration in 1999, equal to that year's entire nursing school output of graduates. Zimbabwe reportedly lost 2,000 nurses per month in 2003. One-third of all Zimbabwean nurses are working abroad. In South Africa, the nurse's union estimates that 300 nurses per month emigrate. Once people migrate to a nearby country, they are better prepared and more likely to move even farther away. Most sub-Saharan African nations are considered by WHO to have a critical shortage of healthcare personnel.[100]

The healthcare professional shortfall in Africa is further aggravated by the HIV/AIDS epidemic, creating great clinical need while also discouraging and disabling healthcare workers. For Africa as a whole, HIV/AIDS will be the cause in 19% to 53% (per various estimates) of all public sector healthcare employee deaths.[101]

Another way of looking at this is through the use of an emigration factor (the percentage of source-country physicians lost to emigration to US/UK/CA/AU.) By region, the highest emigration factor is for sub-Saharan Africa (13.9%), which can least afford this drain. The next highest is the Indian subcontinent, at 10.7%, then the Caribbean at 8.4%, followed by the Middle East and North Africa at 5.2%.

In addition, many middle-income countries with good medical education systems—such as Fiji, Jamaica, Mauritius, and the Philippines—enroll students with the intent to emigrate for job opportunities in countries of the Organization for Economic Cooperation and Development. The Republic of the Philippines has become the world's largest exporter of nurses and anticipates remittances from those expatriates as a boost to the economy. An estimated 85% (164,000) of employed Filipino nurses are working in 46 countries, primarily the U.K., Saudi Arabia, Ireland, Singapore, and the U.S.[102] In addition, Filipino doctors, frustrated with their domestic prospects, are retraining as nurses. Compared with medicine, nursing is seen as a faster and easier pathway to emigration and a well-paying job. Since 2000, 3,500 Filipino doctors have retrained as nurses, and another 4,000 Filipino doctors are in nursing school.[103]

Figure 24. RNs per 100,000 by source country



Source: United Nations Development Programme[98]

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