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ROUNDTABLE 9

The Bermuda Triangle: RN Shortage, Patient Safety, and Regulation

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INTRODUCTION

Healthcare is sailing into a veritable Bermuda Triangle: The nursing shortage, increased regulation and real threats to patient safety. This paper will offer practical advice that can turn the ship around.

This paper aims to shed light on the nursing shortage and what can be done to combat it by:

- Providing an overview of historical trends and statistics that have led to the nursing shortage
- Describing the implications of the nursing shortage
- Summarizing the economic, legal and legislative issues affecting nurse staffing.
- Discussing information and knowledge systems and their value as a solution to the nursing shortage
- Defining the roles of nurse informaticians, CIOs, CEOs and CNOs in healthcare organizations.
- Delineating ways to increase/improve nurse recruitment

BACKGROUND

Morale in the healthcare industry is, understandably, at an all-time low. Since the release of the Institute of Medicine's report, *To Err Is Human*[1], chronicling the much too frequent occurrence of medical error in the U.S. healthcare system, finger pointing and assigning blame have been the norm.

To make matters worse, this news comes at a time when there is a shortage of highly trained nurses and healthcare organizations are being from all sides, by a multitude of organizations and factors including the Balanced Budget Act of 1997, managed care and an ever-increasing flood of regulations from HIPAA and the JCAHO, among others.

As the report's title suggests, human error is indeed possible. But what has tipped the rate of human error in medicine from the realm of possible to probable? Many pundits point to the nursing shortage—and for good reason.

It is true that a third of the nursing workforce is over the age of 50. It is true that recruitment into the profession is seriously low. It is also true that 61 percent of the nursing workforce is only working part-time. There aren't even enough nurses to serve as faculty to teach new nurses coming into the field.

But that very real shortage is exacerbated by a very real unwillingness by healthcare organizations to adapt to it and modify their behavior accordingly. Specifically, the problem lies in the healthcare industry's continued reliance on human systems rather than information systems. As a report in Hospitals & Health Networks[2] asks, "New tools to prevent medical errors are on the market. Why aren't more hospitals buying in?" Why? Because two-thirds of hospital CEOs and risk managers don't think drug errors are a problem in their hospitals, although 98 percent of them think they are a real problem in other hospitals. The reality is that the problems are very real in every hospital —-and it's time to affix solutions to the problems.

The Scope of the Problem

Dire headlines notwithstanding, only a few communities currently have critical nursing shortages. But this, according to experts, is just the lull before the storm. As more firms compete to hire nurses and fewer enter the field, the problem will spread.

How soon? Very. In fact, the nursing shortage is expected to become widespread later in this decade—just as the aging U.S. population requires more care.[3] According to a study by Vanderbilt University's School of Nursing in Nashville, Tenn.[4], healthcare will be hit with a severe nursing shortage—within the next 10 to 20 years.

Just how bad is it going to be? Recent studies predict and/or show that:

- The number of full-time registered nurses is projected to peak around the year 2007 and then decline steadily as more nurses retire along with the nation's aging baby boomers.[5]
- America's pool of nurses is shrinking and the total RN supply will fall 20 percent below projected requirements by 2020.[6]
- The average age of working RNs increased by 4.5 years between 1983 and 1998.[7]
- Within the next 10 years, the average age of RNs is forecast to be 45.4 years, 3.5 years older than the current average age, with more than 40 percent of the RN workforce expected to be older than 50 years.[8]
- By the year 2020, the RN workforce is forecast to be roughly the same size as it is today, which will put it nearly 20 percent below projected RN workforce requirements.[9]

- Enrollments in entry-level baccalaureate nursing programs decreased by 4.6 percent in fall 1999—the fifth consecutive decline in as many years. In addition, recent data from the National League for Nursing indicate declines in enrollments in all types of entry-level nursing programs.[10]

The bottom line? Over the next 10-20 years, there simply won't be enough nurses because not enough women and men are entering the profession and those that are increasingly older and headed for retirement. The additional problem? Those that enter are not as well educated and many that stay are finding it hard to cope.

Why This Shortage—Now?

Of course, nursing shortages are cyclical. Usually, the amount of pay affects the number of new nurses and whether current nurses leave. If pay is too low, hospitals simply boost it and more people apply to nursing school.

But industry observers say this shortage could be worse than others because the problem, which has been building for some time, stems from an anomalous convergence of economic, legislative and societal factors, both positive and negative.

From an economic standpoint, the trouble began in the mid-1990s with the advent of managed care, followed closely by a drop in federal Medicaid reimbursements. These two developments set off an economic crisis that left one of every four hospitals in the red. In response, the hospitals followed the advice of healthcare consultants whose cost-cutting strategies invariably targeted nurse staffing, hospitals' largest expense.[11]

Key legislative developments exacerbated the problems. There were the well-known directives, HIPAA's and the Balanced Budget Act of 1997's mandates to reduce the cost of healthcare. But there were also lesser-known –legislative actions that helped fuel the current profit-above-all-else zeitgeist of the current healthcare market. Case in point—Pegram vs. Hendrich, in which a patient alleged that the financial incentives an HMO offered physicians to hold down the cost of care indirectly and improperly restricted patients' access to necessary medical procedures.[12] The Supreme Court held that rationing of care is not only proper, but also intrinsic to the design of HMOs, saying, in that profit is and ought to be the motive behind rationing of care to patients.[13] And nurse staffing—never mind its importance—can really cut into profits.

Given these economic and legislative developments, hospitals have done everything they can to slowly eliminate or displace their best-trained, highest-paid nurses, from firing nurses outright, to overworking remaining staff, hiring temporary nurses and relying heavily on less-trained and lower-paid practical nurses and aides.[14] The result? An understaffed, high-stress work environment that can compromise patient welfare and lead many of the best nurses to abandon the profession to protect their liability, professional ethics and sanity.[15] And thanks to societal changes over the past few decades, they can.

Simply stated, women—who comprise more than 90 percent of the RN workforce—can find and have been finding something better to do. As Buerhaus et al. point out, the aging of the RN workforce is the result of the expansion of career opportunities for young women and a decrease in the number of young women choosing nursing as a career.[16]

And it's no wonder women are choosing to careers other than nursing. Indeed, there are several common reasons, including:

Unfavorable workplace conditions: From mandated overtime, to inappropriate and insufficient staffing, hospitals are responding to the nursing shortage they helped to create by making the situation worse—creating a vicious cycle with serious implications for all parties concerned.

Other opportunities within the profession: Increasingly, RNs are performing other, nursing-related tasks in non-hospital, less-stressful environments—from working as consultants, to providing in-house medical services for corporations[17] and working physician offices[18]. Table 1 illustrates this trend.

Educational disparity: Currently, a person who spends two years preparing to enter nursing can expect to do so at about the same level in terms of position and salary as someone who matriculates for four years. That's because entry-level nursing education is offered in four-year baccalaureate programs, two-year associate-degree programs and three-year hospital diploma programs, with graduates receiving the same license to practice and most often the same entry-level salaries and positions.[19] This system not only creates a major disincentive for nurses to pursue baccalaureate-level education, it also creates a confusing array of entry-level options that potentially leads secondary-school guidance counselors and students to question nursing as an intellectual endeavor.[20]

Of all the forces leading to the inevitable nursing shortage, however, the most significant comes from within nursing itself and it's as inescapable—and therefore as impossible to stop—as the passing of time.

Table 1: Where the Nurses Are Going

	1984	1988	1992	1996
Total nurses (millions)	1.89	2.0	2.24	2.56
Hospitals/Inpatient settings	68.1%	67.9%	66.5%	60.1%
Ancillary/Outpatient settings	6.6%	7.7%	7.8%	8.5%

Source: Dept. of Health and Human Services, Health Resources and Services Administration, National Sample Survey of Registered Nurses, 1996

An Aging Profession

"The coming RN shortage will be driven by fundamental, permanent shifts in the labor market that are unlikely to reverse in the next few years," according to the Buerhaus report.[21] And perhaps the most challenging and difficult to address reason for the projected shortage is the rapid aging of the RN workforce.

In 1980 and 1990, the RN workforce was dominated by young nurses, with over half of the workforce under age 40.[22] Today, these nurses are in their 40s, dominating the workforce and outnumbering RNs in their 20s by nearly four to one (compared to 1980 when RNs in their 20s actually outnumbered RNs in their 40s).[23] In the next 10 years, more than 40 percent of RNs are projected to be over the age of 50.[24] And while the total number of RNs working full time will peak around the year 2007, the number will decline steadily from that point on as the largest numbers of the workforce retire.[25]

What Does It All Mean?

In some industries, a shortage of workers means slow customer service. In healthcare, a nursing shortage means patients are at risk.

In the past five years, at least 1,720 hospital patients were accidentally killed and 9,584 injured from RNs' actions or inaction.[26] The number of reported nursing errors in hospitals has increased in each of the past five years.[27] Even the American Hospital Association (AHA)—an organization not typically inclined to criticize hospitals—acknowledges that inadequate staffing and insufficient training are putting patients at risk.[28]

These alarming revelations recently appeared in the Chicago Tribune while the IOM's report is still fresh in our minds: Medical errors in U.S. hospitals kill between 44,000 and 98,000 people each year. Medication errors annually kill more than more than 7,000.[29]

According to state and national disciplinary records, RNs long have been responsible for more patient deaths and injuries each year than any other healthcare professional because they spend the most time with patients.[30] So in some ways, nursing errors are nothing new. But the increasing number and frequency of these errors are new—as is the number of patient deaths and injuries resulting from them.

The real question is "What has changed?" The real answer, of course, is the quality and quantity of nursing resources.

Unquestionably, mistakes kill and injure people. Undoubtedly, no one—especially not a nurse—intends to make a mistake that could maim or kill others. Realistically, however, every human being makes mistakes.

Functioning under optimal conditions—no personal worries, plenty of rest, a quiet and calm environment, sufficient resources, good support staff, cooperative patients and so forth—even an extraordinarily intelligent, motivated, educated and alert human being like a nurse might function at 99 percent efficiency. Which means that he/she will make one mistake for every 100 functions performed

According to Dr. Lucien Leape, one of the nation's foremost experts on medical errors, in the average hospital, there are nine steps between a physician's prescription of a drug, and a patient receiving that drug.[31] In terms of errors, then, let us assume that every person involved in every step of this process is operating at 99 percent efficiency. If that is the case, then the likelihood of error is about 10 percent.

But the truth of the matter is that, for all the aforementioned reasons, a real nurse in today's real world is overstressed and overworked in a chaotic, understaffed environment replete with constantly changing procedures, technology and tools, undertrained assistants, low morale and, like any normal person, personal or family problems. This person is responsible giving hundreds of medications ordered (often handwritten, poorly) by a dozen or more physicians to six, eight or more patients with varying diseases, allergies, comobidities and drug interactions, and performing numerous, often complex, procedures and operating/adjusting/programming dozens of machines. There was a study published over a decade ago

that postulated the average staff nurse has to juggle at least 20,000 bits of data at any given moment as she/he cares for patients on the unit. If the nurse operates at 99 percent efficiency, she/he risks making 200 errors at any given point in time. The miracle is that not that some errors are made, but that more are not—errors that harm or kill.

Today's nurses are working in far from ideal conditions. Many RNs try to ameliorate the conditions and reduce the stress they cause by working part-time, which further fuels the nursing shortage and leads hospitals to adopt policies that actually end up increasing stress and adding fatigue into this already volatile mix of problems—actually-promoting conditions which foster even more errors. On the surface, the situation appears hopeless.

APPROACH

The obvious solution is to improve hospital staffing—hire more nurses with more experience. But it's not that easy. Fortunately, there are several other things that can be done or deployed to make a significant difference. Some of the most promising solutions are to be found in:

1. Embracing information and knowledge systems
    - To automate care processes and provide alerts and decision support to prevent errors,
    - To achieve compliance with JCAHO and HIPAA and
    - To accomplish operational efficiencies that recent cuts in reimbursement warrant
2. Increase/improve nurse recruitment by tapping into untapped people markets, such as men and minorities
3. Advocating and backing legislation aimed at improving working conditions

Embracing information and knowledge systems

Although it may not completely solve the problem, information technology (IT) can make things better.

Overworked, undertrained nurses can be accidents waiting to happen. But nursing errors—especially medication errors—often result from inadequate systems.

Today's information systems have the power to make a difference. We can shore up the nursing deficiency with IT tools that help nurses make better decisions faster. Some of the most promising developments include:

Point-of-care computing. Two types of clinical data are clinical records and physiological measurements.[32] Clinical records document brief encounters between health care professionals and patients. They usually include descriptive text, diagnoses, treatment protocols, and nurses' notes on charts and forms. Nurses, respiratory therapists, and other practitioners periodically read physiological measurements from monitors and transfer them to the patient record.

Although clinicians and other end-users of patient records may be held legally responsible for the quality of clinical data, they typically don't enter it until the end of the shift. In many cases, they delegate the task to a nonclinical transcriptionist. When they delegate or postpone clinical data capture, they increase the risk of error. Point-of-care technology addresses this problem by capturing clinical data at the site of care as they're generated.[33] [How do POC systems and the following, CDS systems, help support JCAHO and HIPAA—need general statements and a couple good examples]

Clinical decision support. Clinical decision support, or clinical expert systems improve care by automating care management across the continuum—from abnormal clinical findings to routine dietary requirements. Medical experts customize the systems to know what information to look for, when to look for it, and what to do when they find it. By keeping a constant watch for potential problems and notifying nurses when they arise, clinical expert systems help improve the quality of care.

Pharmacy information systems. To reduce medication errors, pharmacy information systems provide a single, longitudinal solution for managing medication therapy. Information on a patient's medical condition and medication history can flow seamlessly to each new setting, making service delivery more efficient and eliminating redundant and potentially inaccurate data collection. The care team can assess a patient's health status, place and evaluate medication orders, and more accurately dispense, administer, and document medication.

Telemetry. Telemetry measures patient vital signs—from heartbeats to respiration and glucose levels—over a distance. As telemetry becomes more prevalent its devices become more sophisticated, and the lines between medical devices and clinical information systems begin to blur. Telemetry devices are becoming part of their hospital information systems. Together, they'll help to streamline care and improve patients' quality of life.[34]

Physician order entry systems: Physician orders initiate clinical interventions, which then produce outcomes. Some estimate that order entry is where 80 percent of medication errors occur. So if we can proactively influence physician orders, we can influence patient outcomes. But there are a variety of barriers—psychological, behavioral and technological—to physician adoption. The changes required—in terms of what physicians do and what they do it with—are monumental. Table 2 illustrates several of the paradigm shifts prerequisite to physician acceptance of automated order entry systems.

Table 2: Physician Acceptance of Automated Entry Systems: What Needs to Change

	Characteristics	Where we are	Where we need to be
Culture	Leadership Language Communication Measurement Recognition Learning	"I order what I want and document it whichever way I want."	"I order the most appropriate drug or intervention, then document for the sake of quality measurement and the organization's financial health."
Workflow	Number of steps Number of handoffs Collection methods Amount of rework Decisions/actions	Complex Multiple handoffs Errors Rework Miscommunication "The physician's way"	Simple Coordinated handoffs Measurable without chart abstraction "The best way for all"
Knowledge	Viewable Actionable Executable Assessment (direct/indirect) Transfer	Experience Articles Books Best guesses	Order sets Alerts Modal alerts Insights Care scripts National medical databases
Skills	Training Assessment	Ability to write Ability to dictate Ability to call someone	Using standard computing tools OR common operating systems Using browsers Using keyboards
Tools		Pens Prescription pads Order sheets Progress notes	Electronic medical record Electronic tablets Internet cell phones
Facilities	Points of system access	Nursing stations	Wherever there's a connection

Source: Cerner Corporation—Thomas Tinsman, MD, and Roy L. Simpson, RN, C, FNAP, FAAN

Physicians are episodic users of the health care system; nurses provide the continuity that makes it all work. Who better, then, to understand the value of improving the order entry process? Nursing has a responsibility to push physician adoption of automated systems by aligning itself astutely within the organization. Unlike most physicians, the chief medical officer (CMO) is a true hospital employee. Like the chief nursing officer (CNO), the CMO is paid by the organization and therefore accountable for its overall well-being. The CNO and CMO should reach consensus and present a unified front to the administration. The CNO may need to lead that process.

Unquestionably, IT can improve the lives of nurses and their patients. But no matter how sophisticated systems get, the practitioner remains in control of patient care. IT doesn't work without a practiced professional who can translate all the data into care. There's just no substitute for the critical thinking that nurses bring to patient care.

Likewise, there's no substitute for the discernment that nurse informaticians bring to selecting IT tools that support that critical thinking. Nurse informaticians must understand what IT can and should do, then advocate for using systems that support nurses' unique contribution.

Nontraditional recruitment

As the nursing shortage barrels toward becoming healthcare emergency, the industry and the profession will have to develop ways of reaching out to and recruiting people that don't fit the traditional nursing model—namely, men and minorities. According to the U.S. Department of Health and Human Services' Bureau of Nursing[35]:

- 94.6 percent of all U.S. registered nurses are women, while only 5.4 percent are men.
- 89.1 percent of all U.S. registered nurses are white, 4.3 percent black, 3.7 percent Asian and 1.7 percent Hispanic.

These current disparities represent significant potential for increasing the numbers of qualified people entering nursing. And fortunately, healthcare's recruitment efforts will get a boost from the educational arena. The American Federation of Teachers' has joined forces with its 53,000-member Federation of Nurses and Health Professionals to establish a task force of national healthcare experts to explore what it will take to attract more people, including men and minorities, to the overwhelmingly female-dominated profession.[36] This initiative represents the first national panel to tackle nurse recruiting, with a special focus on expanding beyond the usual female pool of candidates.

Advocating and backing legislation aimed at improving working conditions

The idea that staffing should be determined the number of patients and the degree of their sickness is a basic one that most people would understand. However, profit—rather than patient census and acuity—has increasingly become the determining factor in hospital staffing. And the result—too few nurses with poorly matched competencies—has created abysmal working conditions.

Realizing that hospitals are only going to fix the problem if they're made to and that patient safety rests in the balance, nursing has begun advocating for legislation to mandate nursing staffing ratios. A good example of this trend is the American Nursing Association's (ANA) development of Principles for Nurse Staffing. Those principles maintain that the number, mix and competencies of nurses must be considered in light of patient census and acuity when determining the best blend of professional care in hospitals and other settings.[37] The principles have been instrumental in helping individual nurses advocate for appropriate staffing levels and participate in designing patient care systems, which result in improved quality patient care.[38] In addition, ANA's constituent member associations (CMAs) have succeeded in having them included in collective bargaining agreements with hospitals such as Howard University Hospital in Washington, DC. [39]

Legislative action is happening at both the state and national level, as evidenced by such initiatives as the "Registered Nurses and Patients Protection Act," (H.R. 5179), introduced by Rep. Tom Lantos (D-CA), which would amend the Fair Labor Standards Act so that no RN would be required to work beyond eight hours in any workday or 80 hours in any 14-day work period, and AB 394, the California bill that expands required minimum nurse-to-patient ratio levels to all units in acute-care facilities.

RESULTS/RECOMMENDATIONS

It's time now for the nursing profession to achieve real progress in healing healthcare. No one knows better how to provide safe, high-quality care to patients. By following the recommendations presented, the nursing shortage can be eliminated, medical errors reduced and the very integrity of the nursing profession enhanced.

According to Dr. Leape and other experts, healthcare could cut medication errors by 42 percent with relative ease and little expense[40]. Some of the ways to do this include:

- Embracing information and knowledge systems that can automate care processes, provide alerts and decision support to prevent errors, automate and ensure compliance with JCAHO and HIPAA and create the operational efficiencies warranted by recent cuts in reimbursement.
- Increasing and improving nurse recruitment by tapping into heretofore untapped, nontraditional markets
- Advocating and supporting legislation aimed at improving working conditions

CONCLUSION

Beyond question, the nursing shortage complicates staffing, scheduling, budgeting, delegating, even the ability to implement and use information technology—just about every aspect of management and systems advancement. But there are practical, doable, time-tested approaches to keeping patients safe, healthcare organizations compliant and efficient, and the ability of nursing to deliver high-quality care.

AUTHOR BIOGRAPHIES

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