Air Medical Journal 36 (2017) 282–286

Contents lists available at ScienceDirect

Air Medical Journal

journal homepage: http://www.airmedicaljournal.com/

Critical Care Update

Teaching: A Newer Face

David J. Dries, MSE, MD

My historical exposure to medical education began with fact recollection and pattern recognition. Here I talk about thinking more deeply about how we learn and train each other. In my past column, I spoke about the learning climate. The importance of proximity, for example, is again emphasized so that we can share thoughts and questions with each other. I have come to believe that we need to think about how we process the information we receive and recognize the traps of pattern recognition and rewards based on the recall of facts. Failure to move beyond simplistic information assessment could lead to false assumptions and poor care. As a surgical educator, I am also looking for opportunities to help trainees develop procedural expertise. Recent lessons suggest that mentored procedural review in a safe environment may be effective. Unfortunately, even the best teachers may be misunderstood. Ultimately, there is no better feeling than working on a team in which multiple partners can contribute to a reasoned and effective treatment strategy.

Rosenthal DI, Verghese A. Meaning and the nature of physicians' work. *N Engl J Med*. 2016;375:1813-1815.

Pucher PH, Aggarwal R. Improving ward-based patient care: prioritizing the ward round in training and practice. *Ann Surg*. 2016;263:1075-1076.

Nelson WG, Rosen A, Pronovost PJ. Reengineering the physical examination for the new millennium? *JAMA*. 2016;315:2391-2392.

In the past, the work of a hospital physician was based at the bedside. Trainees had the opportunity to witness the unfolding of disease and to know their patients over the course of hospitalizations. Medicine was a fraternal order in which the lounge was a central location where providers ate together, socialized, and "curbsided" each other for patient consultations. Charts were kept on paper and often difficult to read.

No longer are there paper charts. With the coming of the electronic record, it takes moments to track down laboratory and radiology results, and trainees often spend 40% to 50% of their day in front of a computer screen creating documentation, reviewing charts, and placing orders. The remainder of their time is spent on the phone coordinating care with specialists, pharmacists, dieticians, primary care offices, family members, social workers, nurses, care coordinators, and, occasionally, those who fund care. Many of these meetings occur without face-to-face contact. Remarkably, time spent with patients has remained constant. Skills learned early by today's trainees, because they are critical to finishing the work, are not those needed to perform a good physical examination or take a history but rather the arts of efficient computer work, documentation, and sign-out in the electronic age. When a medical team gets notice of a new admission, the instinctive response is to turn on the computer to study the medical record before meeting the patient. This approach has advantages but dilutes independent assessment, contact quality, and confirmation of history and physical findings.

The majority of what we define as work takes place away from the patient in workrooms and on computers. Attention is so frequently diverted from the lives, bodies, and souls of the people we treat that the clinician focused on the screen rather than the patient has become a popular image. Technology has allowed us to care for patients at a distance from the bedside and the nursing staff. Providers have also distanced themselves from the identity of patients as well as colleagues to do work on the computer.

What is the work of a physician? Medical students entering the wards for the first time recognize a disconnect, seeing that physician's work has less to do with patients than they had imagined. Skills they learned in courses on physical diagnosis or communication are unlikely to improve. Despite the rhetoric about patient-centered care, the patient is not at the center.

It is becoming clear that physicians are increasingly dissatisfied with their work, resentful of time required to transcribe and translate information for the computer, and the fact that in that sense work never stops. A recent study by the American Medical Association suggests factors associated with greater satisfaction. These investigators found that perceptions of higher quality of care, autonomy, leadership, collegiality, fairness, and respect were critical. Persistent problems were identified with usability of electronic health records. Although we practice in a safer and more efficient system with measurable outcomes, our current rates of burnout suggest that careers are often unfulfilled.

To restore meaning, changes needed are complex and begin with dialogue including providers on the front line. The greatest opportunity for improving professional satisfaction in the short-term lies in "restoring connection with one another." We can work on rebuilding practices and physical spaces to promote human connection between physicians and patients, physicians and physicians, and physicians and nurses. We should get back to the bedside with patients, families, and nurses. We should get

1067-991X/$36.00

https://doi.org/10.1016/j.amj.2017.09.006

to know our colleagues from other specialties in shared lunchrooms or meeting spaces. In addition, in the coming years, the medical community will have to rethink the human-computer interface and more thoughtfully merge the real patient with the "iPatient."

Technology cannot restore professional satisfaction. A sense of teamwork, community, and ties that bind us together as human beings are essential and gained by spending more time with each other and with our patients, restoring rituals that are meaningful to us all and eliminating those practices that are not. Our witness to the sufferings of others and the opportunity to provide comfort and care is the privilege at the heart of the medical profession.

How can we improve ward-based care? Medical knowledge is not enough. To lead an efficient ward round, clinicians must be practitioners, communicators, managers, and leaders. The Halstedian apprenticeship in which trainees learn to conduct ward rounds through experience, trial, and error reflects the complexity of the task. The manner in which ward rounds are learned, taught, and performed must change.

This necessity is identified in the concept of "failure to rescue" after surgery. First described by Silber in 1992, failure to rescue is defined as the death of a patient from complications rather than from the primary diagnosis. Initially restricted to the postoperative complications in surgical patients, this concept has now been expanded to include medicine patients as well. Within surgery, a growing body of literature suggests that failure to rescue is responsible for a large part of variability in patient outcomes, with postoperative care increasing the focus on efforts to improve outcomes.

If ward round performance is to improve, it must first be measurable. Historically, educators have lacked the means to measure, but a growing body of evidence now provides a variety of tools with which to objectively assess, improve, and guide ward round practice through objective and reliable means.

In seeking to quantify ward round quality, the design path of ward round assessment tools has been remarkably convergent. All studies to date measure performance based on a thoroughness of assessment model combined with an evaluation of nontechnical skill. The completion or omission of tasks such as checking vital signs and prescription charts, physical examination of the patient, and articulation and documentation of a treatment plan form the basis of various scoring frameworks that may be used to assess clinicians ward round performance in conjunction with a rating of nontechnical skill or teamwork. Performance in this manner has been linked to improved outcomes. Improved ward performance has been associated with a reduction in postoperative complications.

Although patients were once passive subjects during rounds, they are now increasingly active participants in deciding the course of care. Direct involvement of patients and next of kin in care decisions is increasingly seen as a part of good practice. In a recent trial, medical ward wounds were conducted in a standard fashion with patients and clinical staff only versus rounds with family members invited to be present. Follow-up surveys of staff, patients, and families indicated overwhelming preference for the later format despite concerns for the increased time required.

In modernizing practice, there is a need to balance greater transparency and communication with preexisting clinical commitments and limited staff availability. Greater integration of modern technology into routine practice may provide the means for faster, more efficient communication between staff and patients alike. With intuitive software design and an increasingly technologically literate population, it is possible that patients may link directly into their medical notes on the ward not only to understand but also to contribute to care decisions. Electronic communication tools integrated into routine care may provide information on progress, diagnosis, and treatment to patients and relatives just as they feed back real-time information on symptoms and concerns to the clinical team.

Patients hope for more face-to-face time with physicians. Most physicians want to ensure that diagnosis, treatment plan, expected benefits, or adverse effects of treatment are well understood by the patient. They also desire respectful treatment of patients and understanding of the personal perspective of the patient. Thus, many physicians are concerned that bedside examination has been progressively deemphasized in favor of objective testing and imaging that is easy to obtain and record in electronic health records. Recent reviews suggest that physical examination has reduced value and may benefit from revitalization and reengineering to make it more effective.

Technological advances have much to offer in regard to the collection of vital signs and include readily and rapidly available highly accurate measures of these parameters along with body weight, body mass index, and oxygen saturation. Simple vital signs may evolve into a collection of companion diagnostic markers. Instruments available to measure vital signs often outperform measurements taken by physicians. There is an increasing need for tight control of blood pressure, for example, and physicians compromise care by not using the best technological means for the collection of blood pressure data. Because device engineering allows for more effective collection of data in the electronic medical record, vital signs in the future may include electrocardiography to evaluate rate and rhythm along with analysis of arterial pulse rate, morphology, and other easily obtained data. Frequently, these data can be obtained outside the ward or physician office.

There are other opportunities to improve the accuracy, precision, reliability, efficiency, documentation, and integration of findings. For example, the skin is well suited to photography, which is now as easy as a click on a smartphone. Physician examination should provide a quantitative phenotype of a patient at any given time. The examination strategy perfected in the last millennium is limited to verbal description of qualitative findings. A barrier to the adoption of measurement science principles has been the lack of technological tools to assess physical findings without prolonging physical examination. Contemporary advanced technologies enable better data collection and efficiency during physical examination. Teaching physical examination skills will benefit increasingly from the use of technologies, especially those associated with simulation training.

Physical examination should measure the individual phenotype at any given time just as accurately as current genome studies. Medical history can evolve to better reflect environmental exposures, diet, physical activity, microbiome, and social determinants of health. Realizing the benefits of precision medicine and individualized health care will require refinement in the collection of medical history and physical examination. The expansion of regulatory agency policies to require the sharing of health information will be essential so that standards can be evaluated, changed if necessary, and adopted. Those developing technology will benefit from the creation of well-defined physical examination strategies accommodating progressive refinements in the measurement of physical findings, rapid archiving in electronic medical records, and accessibility to full data assessment of the patient for analysis and display. Reconsideration of physical examination may aid in the transformation of medical care from disease response to health promotion. Historically, patients sought help because of symptoms of disease reflected processes threatening organ function. In the future, patients with no symptoms and limited physical findings could undergo improved examination with the aid of new technologies to interpret the