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An Updated Focus on Internal Medicine Resident Education

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These times are rocky and uncertain for many residency programs. The new 2011 Accreditation Council for Graduate Medical Education (ACGME) duty hour requirements led to a major change in the philosophy of resident training. The typical "long call" shift of 30 hours is no longer permissible, requiring most programs to fundamentally change the structure of their ward teams and admitting schedules.[1] More stringent requirements for postgraduate year (PGY) 1 residents have further complicated the design of rotations and created perceptions of subtle culture clashes between this year's PGY-1 and PGY-2 residents. The classic hierarchy in which senior residents were scheduled for less intensive rotations has been inverted to some degree such that PGY-2s and PGY-3s are doing more "intern work."

Duty hours are not the only challenge facing residency programs. The changing national environment of health care also is necessarily shaping the way we train our future physicians. In 1960, health care spending accounted for 5.2% of gross domestic product. By 2007, it had ballooned to 16%. This reality has led to an explosion of catch phrases such as value-based purchasing, pay for performance, and bundling. For house staff, this reality translates into pressure to discharge before noon and decrease length of stay, all in the setting of increasingly complex health care systems. In addition, they must continue to fulfill the traditional roles of leading a health care team, providing excellent patient care, furthering their own education, and facilitating the learning of other students and residents on their team. This teaching is no small task either, especially given the logarithmic increase in collective medical knowledge as well as the expansion of available diagnostic tests and therapeutic interventions.

From the perspective of medical education, it boils down to one simple truth: there are more knowledge and skills to teach than ever before but less time to do so than ever before. To address this challenge, we must look at our training programs with fresh eyes and not only change schedules, but fundamentally alter our approach. The changing future is coming in one form or another, and medical educators must be nimble enough to pull ourselves out of the educational paradigm in which we trained and devise creative new ways to train outstanding physicians.

PARADIGM 1: MORNING REPORT HAS TO GO . . . SOMEWHERE

Imagine it is 7:30 AM on a typical ward day. The hospital is in overflow so you have 2 admissions waiting for you in the Emergency Department. You are in the process of admitting them when your case manager calls to ask why Mr. B didn't go home yesterday and also to let you know that Mrs. S has a bed at the nursing home, but they want her there by 2:00 PM so you need to get the discharge paperwork done ASAP. Attending rounds are coming up soon, and you still need to preround and run the list with your interns. All of a sudden, your third-year medical student runs into the team room to tell you that Mr. R's potassium just came back and

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it's 7.1. Just then a cheery chief resident pokes his head in and says, "Don't forget to come to morning report!" Sound familiar?

The mornings are a critical time of day in the care of the patient. The bulk of decision-making needs to occur during this time so that orders can be entered. The earlier orders are placed, the more likely you are to have results by the afternoon so that another decision point can be crossed. The increase in utilizing night admitting teams also means more admissions will be passed off in the morning, making this time a critical moment in handoffs and transitions of care. A teaching conference scheduled in the middle of the morning is, at best, an inconvenience and at worst, a major disruption in patient care.

PERSPECTIVES VIEWPOINTS

- The climate of graduate medical education is changing in the face of new duty hours and increasing economic pressures.
- Residency programs must adapt by using creative new training and teaching methods.
- Improved teaching conferences, more efficient rounding, improved supervision, and graduated responsibility linked to clinical competence are suggested methods to improve graduate medical education.

Few would question the educational value of a well-run morning report. Case-based teaching has higher yield than lectures, and it is an opportunity for residents to discuss differential diagnosis, plans of care, and learn from experts in the field. But to reach its potential, morning report must happen at a time when residents are able to attend with minimal clinical pressures. The exact time depends on the program, but morning report must go somewhere other than the morning.

PARADIGM 2: NOON CONFERENCE NEEDS AN OVERHAUL

The days of PowerPoint lectures are numbered (or at least they should be). Active learning strategies (eg, problem-based learning, collaborative learning, simulation) shift the focus of education from the lecturer to the learner. These approaches allow the learner to actively engage in the learning process. By facilitating this interaction, instructors are better able to diagnose the learner's needs and target the material more effectively.

Literature in the learning and cognitive sciences show that active learning techniques have higher retention rates than the traditional passive, lecture format.[2] Evidence in medical education is less available, but there is growing literature at both the medical student and residency level that supports the use of active learning techniques, such as problem-based learning and medical simulation.[3,4] In terms of educational value, it means that a case-based discussion group combined with simulation could easily replace an entire week's worth of lectures.

This shift also matters because, like morning report, noon conference can be useful only if residents are able to attend and are able to focus on the presented material. The only way to consistently ensure both of these prerequisites is to relieve residents of clinical responsibilities during those times. Providing coverage every day is a significant undertaking. Doing it twice a week is much easier.

Lectures may still have a role in the educational framework, but proven active learning techniques need to replace the bulk of our passive learning conferences. Time is too precious to waste on ineffective teaching methods.

PARADIGM 3: ROUND AND ROUND WE GO . . .

Attending rounds need to be earlier and more efficient. With all the pressure to discharge before noon, how is it logical to start rounds at 10:00 AM and round until 12:00 PM? Medicine services will always be at a disadvantage in regards to this metric due to the inherent unpredictability of a patient's hospital course. Surgical patients have an expected postoperative course for a planned surgery, and unless there are unexpected complications, patients typically are discharged on a day that is designated from the moment of admission.

But that unpredictability is no reason to make it nearly impossible to get the discharge papers in the chart before noon. Attending rounds need to start in the early part of the morning, perhaps 8:00 AM or 8:30 AM. If you have addressed the first paradigm, then your residents will not be trying to rush to morning report at that time.

Rounding earlier has the added benefit of starting the plan of care earlier in the day. The sooner you order the computed tomography scan, the more likely you are to have a result by the afternoon, and that could have a significant impact on length of stay.

Starting rounds at 8:30 AM should not give cause to simply round longer. Attending rounds are an important piece of education and patient care, but they are by no means the only piece. We need to rethink the way we round to optimize the time we have. Walking geographically and writing orders along the way are simple things that can increase efficiency. But we can do better. Maybe attendings should pre-round and gather data so that house staff can simply present the pertinent vitals and labs? Perhaps not every patient needs to be seen by the entire team every day? We should not

re-obtain the entire history with the residents in the room. Some of these are style points, to be sure, but style must still conform to function.

PARADIGM 4: RESIDENTS CAN'T (AND SHOULDN'T) DO EVERYTHING ALONE

Residency training is a different world today than it was a decade ago. First in 2003, then again in 2011, ACGME enacted duty hour regulations in an effort to reduce resident fatigue and improve patient safety. One practical effect of these changes is that residents cannot care for the same number of patients as their predecessors. Various programs have tried a variety of approaches to address this change. Some have instituted (or expanded) nonteaching services, typically by increasing the ranks of their hospitalist divisions. Others have relied on mid-level providers, such as nurse practitioners. Both these solutions will work, but are expensive.[5]

Some programs have resorted to creative schedule adjustments. While schedule changes are imperative for compliance with the 2011 duty hour requirements, trying to use the same number of residents to care for the same number of patients is essentially a mathematical impossibility. Efforts to do so will invariably degrade education for 2 primary reasons. First, residents will prioritize (and rightly so) their time to ensure their clinical duties to their patients are fulfilled. This prioritization means less time for teaching residents and medical students. In some settings, this change could mean rushed attending rounds that cover only the basic details of patient care and do not allow for bedside teaching. Second, the same clinical pressures make attendance at conferences a near impossibility. The larger prevalence of shift work (necessitated in part by the 16-hour rule) also means more residents are on night shifts that typically lack scheduled conferences and often provide less attending interaction.

The solution is not simple and requires a hospital-wide commitment. First, patient care systems need to be evaluated and adjusted to maximize efficiency. Electronic medical records and order entry are just the beginning. Case managers and discharge planners must be readily available to facilitate the copious paperwork that needs to be completed before discharge. Staff to assist in scheduling postdischarge appointments can save valuable time in the resident's day. These system interventions can be taken a dramatic step further. Business concepts such as LEAN and Six Sigma are already being applied to hospital systems. These same approaches can be applied to residency workflow to gain much-needed efficiency without sacrificing patient care.[6] In this way, programs can ensure appropriate levels of patient interaction while still allowing time for education.

Second, nonteaching services must increase in size through a combination of physicians and physician extenders. While this expansion incurs a financial cost to the institution, carefully structured services and creative utilization could yield increased revenue and efficiencies that offset the financial burden. For example, the in-house night hospitalist at our institution has multiple duties, including assistance with triage of Emergency Department admissions, staffing (and potentially discharging) of patients admitted to the short-stay observation unit, and supervision of the various overnight residents.

The 24-hours-per-day in-house supervision of residents is a concept that cannot be overemphasized. Many critics believe that medical errors committed by house staff have less to do with fatigue and much more to do with inadequate supervision. True or not, the current state of increased shift work makes the importance of in-house supervision that much more important for patient safety.

PARADIGM 5: SCHEDULES AND THE ACGME DUTY HOURS NEED COMPETENCY-BASED FLEXIBILITY ("FLEX SCHEDULING")

The 2011 ACGME duty hours establish a graduated level of responsibility, with increased hours of duty linked with increasing competency and experience. Because of this thought process, there is a distinct (and rather abrupt) difference in duty hour requirements between PGY-1 levels and PGY-2 and above. This gradation has raised some concerns that the transition from internship to residency, an already difficult process for many residents, will be even more challenging as house staff now must acclimate to longer work hours in addition to taking on greater responsibility and decision-making.

The abrupt graduation of an intern to a resident ignores the fact that learning is a gradual process, with periods of gradual inclines interspersed with abrupt increases in competency. Simply put, an intern in June is a far different physician than a fresh intern in July.

When viewed through this lens, the current system of training is inadequate and unfocused. Novice interns should be afforded the most support, limited in autonomous clinical responsibility, and have fewer duty hours to ensure time for rest and education. An advanced beginner should be allowed to take on more responsibility commensurate with his or her abilities with increased duty hours. By the latter part of the year, an intern who has achieved appropriate competency and proficiency in most areas should have responsibilities similar to an early PGY-2 (**Table**).

The ACGME Milestone Project is an ideal assessment tool to provide outcomes-based evaluations of residents. Interns who are progressing appropriately through the milestones should be challenged to take on

Table Flex Scheduling: Example of What a "Flex Schedule" Might Look Like

Competency Level	Approximate Time of Year	Consecutive Hours	Admission Cap/Total Cap
Novice beginner	July – October	14 h	4/8
Advanced beginner	November – February	18 h	5/10
Competent intern	March – June	24 h	6/12

Note the progressive caps on admissions and duty hours that are directly linked to intern competency level.

more responsibility to further their growth as clinicians. While this individualization is admittedly a logistical challenge from a scheduling standpoint, the concept is feasible with careful planning. In addition, programs that consistently train high-quality residents and can document program-wide progression through the milestones should be allowed to schedule for progressive responsibility at the beginning of each year. In this model, training programs can better fit the needs of the learners by matching responsibility with capability, therefore creating a more gradual transition to the PGY-2 year.

CONCLUSION

The political, economic, and medical aspects of health care delivery have all changed substantially. It should come as no surprise that the educational component also is undergoing difficult transitions. What has been outlined in this commentary is not the panacea for all the problems we face, but is simply a different way of approaching the paradigms of the past. It is meant to encourage discussion, creativity, and innovation. It is meant to show that some of the challenges we face in medical education can become opportunities to bring about positive change.

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