“But as strict as the rules have become, we may need to reevaluate them.”

BY AMY LYNN SORREL  Cari Sorrell, MD, expected a trial by fire in her first year of training as a medical resident at The University of Texas Health Science Center (UTHSC) in San Antonio. She planned to put in long hours and get as much experience and clinical exposure as possible to join the ranks of upper-level trainees.

Dr. Sorrell’s internship in internal medicine met her expectations — up to a certain point. The work-hour limit is 16 hours, after which first-year interns must check out and leave the hospital for a mandated rest period between shifts.
“To use an old model of education and training in a new model of work hours may not work.”

The 2011 Accreditation Council for Graduate Medical Education (ACGME) rule restricting intern hours is one of the bigger changes among reforms intended to improve patient safety, residents’ education, and their quality of life by reducing fatigue for physicians-in-training.

Several recent studies suggest the rule may have missed the mark. Reported increases in patient handoffs and medical errors and less preparation of interns to take on more senior roles contribute to an overall perception that shift limits diminish the quality of residents’ training and potentially patient care.

For Dr. Sorrell, now in her second year, the changes translated to some lost opportunities.

In medical school, her program included rotations modeled after the former 30-hour overnight call shifts. But as an intern, instead of following patients for 24 hours to see how the cases develop, she often had to hand them off as her shift ended.

“We don’t get as much continuous exposure [to patient cases] during their initial work-up, and without that, the learning curve has become steeper after intern year,” she said. “For me, a lot of informal teaching and learning with the attending happens in the down time, and now some of that gets lost because the work-hour limits are so structured.”

Programs, too, had to make significant adjustments both financially and structurally to adapt to the duty hours, with little obvious benefit to patient care, says Curtis Mirkes, DO, a member of the Texas Medical Association’s Council on Medical Education Academic Physicians Subcommittee. “Every program that has residents has seen some sort of effect — either neutral or negative — on patient care.”

More importantly, the new standards can change the way medical trainees approach medicine. “The mentality of the learner has gone from a more traditional type of work to a ‘shift’ mentality; from ‘This is my patient to take care of no matter how long it takes,’ to ‘This is my patient until 5 pm’,” said Dr. Mirkes, who directs the Texas A&M Health Science Center College of Medicine internal medicine residency program at Scott & White Healthcare in Temple.

The issue is the subject of ongoing review by and a top priority for ACGME, says Kevin B. Weiss, MD, senior vice president for patient safety and institutional review. But he reiterated that the new rules came from legitimate public concern over patient deaths perceived to be related to resident fatigue.

Teaching hospitals and residency programs are just now beginning to adapt to the changes, so it’s too early to say whether the work-hour limits are meeting their intended goals, he says.

“But these studies are important for us to review and will be part of the discussion at the ACGME on how to begin thinking about duty hours requirements going forward,” Dr. Weiss said. “To use an old model of education and training in a new model of work hours may not work. An important question is: How is graduate medical education adapting to these new work hours, and how are we using new tools of education to allow residents to train differently?”

Shifting the limits
In 2003, ACGME began regulating residents’ work when it established the 80-hour workweek. The move came in response to public concern that resident fatigue contributed to medical errors and patient deaths and to congressional demands for federal oversight.

A subsequent 2008 Institute of Medicine (IOM) report found the initial reforms did not go far enough and highlighted studies showing the detrimental effects of fatigue on clinical performance.

The IOM report called for additional revisions to medical resident duty hours aimed at improving patient safety, as well as residents’ learning experience. Those recommendations included:

- Maximum shift lengths and defined off-duty periods;
- Greater supervision of residents by experienced physicians;
- Adjusted workloads based on residents’ level of training;
- Structured handoff processes, and
- Restricted moonlighting.

In 2010, the ACGME Board of Directors approved broader reforms in line with the IOM recommendations, but only after what Dr. Weiss described as a lengthy, multistakeholder process. It included input from across the medical profession and deliberations on available research on the impact of sleep issues, patient safety, and resident training.

The most significant change was restricting first-year residents to 16 hours of continuous duty, down from 30 hours. For residents in year two and beyond, shifts dropped from 30 to 28 hours. The thinking was interns were more suscep-
tible to fatigue-related errors because they had less experience and were less used to working long hours.

While residents and program directors appear to generally approve of some form of duty hour limits and other reforms such as supervision, much of the critique focuses on the 16-hour shift limits for interns.

In a pair of surveys published in March in the New England Journal of Medicine (NEJM), 72 percent of residency program directors disapproved of the regulation. Three out of four directors and 52 percent of residents felt interns were less prepared to take on more senior roles.

The studies surveyed more than 700 residency program directors in academic and community-based institutions and more than 6,000 residents, all in an array of specialties, on the perceived effects of the duty hour regulations.

An overwhelming 88 percent of program directors and 72 percent of residents reported increases in patient handoffs under the new standards, although perceived patient safety, resident fatigue, and total hours worked mostly went unchanged, despite the limits on interns.

Interns’ quality of life was the only area in which residents and program directors reported notable improvements.

Research published in the Journal of the American Medical Association Internal Medicine in March revealed similar findings.

One study conducted at The Johns Hopkins Hospital in Baltimore showed that the number of patient handoffs rose from three under the old 30-hour shift limit to nine for those working 16-hour shifts, accompanied by perceived reductions in care quality and educational opportunities.

In another survey, 22 percent of interns who trained under the 16-hour shift limits reported committing a serious medical error, compared with 19 percent of residents who did their first year of training before the new rule. That study looked at the effects of the shift limits among more than 1,300 medical interns in 51 residency programs and 14 university and community-based GME institutions.
Handoffs create risks, costs
Dr. Mirkes says his program had to adapt its call schedules to the shift limits. But the changes “have increased the number of handoffs, so we are losing that continuity of care. And more people taking care of one patient over a period of time means more risk.”

With fewer interns on call, the program shifted some of the workload to others and increased the use of float teams at night. Since the work typically goes to more expensive senior staff and midlevel providers, however, Dr. Mirkes said it has been a “really big financial adjustment.”

In fact, the 2008 IOM report predicted that additional program costs associated with shifting workloads could range up to $1.7 billion per year nationally.

A 2010 study conducted for ACGME just before the reforms also found the changes could cost programs hundreds of millions of dollars, but noted possible savings between 2.4 and 10.9 percent if the policies help reduce preventable adverse events.

Dr. Mirkes also fears that over the long term, the changes could lengthen residency training, which also would add to costs when GME funding and residency slots already are scarce. “I’m looking at whether after three years, they are prepared to go out and do private practice in the real world. And in internal medicine, it will be four years if it keeps up the way it is.”

Third-year neurosurgery resident Colin Son, MD, says younger residents training in surgery specialties like his, which depend more heavily on continuous exposure to cases, have been particularly vocal about their discontent with the shift limits.

“One of the best experiences you can have in terms of learning value is being the person who takes the first call in the emergency department, formulating a plan on your own, and being there overnight” to follow through on the case, said Dr. Son, chair of TMA’s Resident & Fellow Section and a resident representative to the TMA Council on Medical Education.

The changes impact upper-level trainees, as well.

According to the NEJM surveys, 65 percent of residents reported that seniors were taking on more work from junior residents, and quality of life for senior residents mostly worsened.

Dr. Son thought that by his third year at UT Health San Antonio his schedule and training would get more flexible as he graduated. Instead, he finds himself taking call more often because there are not enough interns. “We [senior residents] certainly have more work.”

And because they are busier, they are not always available to assist and teach the interns.

Dr. Sorrell says that so far she has not noticed the shift limits translate to poorer patient care. “I don’t think the rules have changed patient care at all.”

She has taken advantage of off-duty hours to sleep or rest, which may have improved her quality of life as a first-year resident — time she may have otherwise spent with her husband, who is not always around because he, too, is in training. So more time off does not necessarily mean more time to study to make up for some of the clinical exposure shortfalls associated with duty hour regulations, and she still may have worked as much in the end.

She doesn’t anticipate the changes will extend her training beyond three years, but says residents will work harder to make up any lost opportunities during their upper-level years. “That’s the nature of medicine and how it is learned.”

Duty hours in general are beneficial in providing structure and rest for residents and likely are here to stay, he says. “But as strict as the rules have become, we may need to reevaluate them.”

Finding the magic number
Most of the studies to date are based primarily on perceptions, versus clinical and educational outcomes. Researchers and educators acknowledge the need for more study.

ACGME’s Dr. Weiss says that will take time, but the recent findings still raise concerns worthy of consideration, along with emerging literature on resident education, sleep, and well-being.

But there is nothing inherently wrong
with shift work in medicine, he says, pointing to emergency medicine as one of the earliest examples. “It’s the professionalism and the process that has to be managed,” and the rules and programs alike need to adapt to changes in health care.

For example, handoffs, in one form or another, are a regular part of today’s team-based care model.

“The question is: What do handoffs look like, and should they be based on duty hour requirements per se, or is there some other appropriate way to signal that transition needs to occur? But most importantly, it has to be a good handoff process,” Dr. Weiss said.

Researchers at Johns Hopkins agreed that “increased supervision and training in handoffs may mitigate” related risks for medical errors, suggesting “an urgent need to study, standardize, teach, and improve this critical component of care.”

One study conducted at Vanderbilt University Medical Center and published in the April issue of Academic Medicine showed that interns in internal medicine did not experience decreased clinical exposure to common medical problems and procedures with the new shift limits. But researchers noted that was likely due in large part to the fact the program prepared three months in advance of the new rules to change schedules and troubleshoot.

Meanwhile, authors of one of the NEJM surveys proposed that rather than a one-size-fits-all approach, individual residency review committees should be able to develop specialty-specific work-hour rules that balance education and patient safety.

Whatever the path forward, resident buy-in is another important element, says Dr. Mirkes, who agrees that more evidence-based study of the issue is needed.

He brought together a task force of first- and second-year residents; gave them a piece of paper and copies of the program curriculum, duty hours, and rotations requirements; and let them set a schedule they could stick to without violating the ACGME regulations.

“It took a lot of time and effort, but we really got them on board,” he said.

Resident “Match Day” sets record; more choose primary care

Annual “Match Day” set a record this year with an all-time high of 40,000 medical school graduates participating to match to residency training positions across the country, with more students choosing primary care. This year also saw a record 29,171 slots offered, about 2,400 more than in 2012.

The National Resident Matching Program (NRMP) attributed the rise to a growing number of new medical schools graduating their first classes, as well as enrollment expansions in existing medical schools.

Still, the Association of American Medical Colleges (AAMC) expressed concern about what it says is a high number of qualified U.S. medical school graduates who did not match to a residency training position. NRMP figures showed that roughly 1,100 graduates went unmatched this year, up from 850 in 2012. About half of those, 528 seniors, did not find a position following a second informal match selection process — double the number of unmatched graduates in 2012.

AAMC President and Chief Executive Officer Darrell G. Kirch, MD, said the results “demonstrate the urgent need to increase federal support for graduate medical education” to increase the number of residency training slots.

Among those graduates who did match, 79 percent found one of their top three preferred programs, and more than half of U.S. seniors and almost half of independent applicants matched to their first choice, according to NRMP.

Primary care saw gains over last year,
with 400 more seniors matching to primary care specialties, specifically family and internal medicine and pediatrics. More than 95 percent of family medicine positions were filled.

Other specialties that saw increases include dermatology, neurology, surgery, and radiation oncology.

Other notable statistics:

- 1,000 more seniors from allopathic schools participated in the 2013 match.
- 2,677 students were graduates of osteopathic schools, 317 more than in 2012.
- Participation among U.S. citizen and noncitizen graduates of international medical schools increased over 2012.
- Emergency medicine and anesthesiology programs offered more positions this year.

State-specific numbers were not yet calculated at press time. More information about Texas match statistics will be in future issues of Texas Medicine.

Texas schools qualify for AMA grants to revamp medical education

Baylor College of Medicine, Texas A&M University College of Medicine, and Texas Tech University Health Sciences Center School of Medicine were among 31 medical schools and collaborative groups chosen by the American Medical Association to qualify for grants to develop new designs for undergraduate medical education.

As part of the “Accelerating Change in Medical Education” initiative, AMA will provide $10 million over the next five years to fund 8 to 10 projects that:

- Develop new methods for teaching and/or assessing key competencies for medical students, and foster ways to create more flexible, individualized learning plans;
- Promote exemplary methods to achieve patient safety, performance improvement and patient-centered team-based care, and improve understanding of the health care system and health care financing in medical training; and
- Enhance development of professionalism throughout the medical education learning environment.

“Rapid changes in health care require a transformation in the way we train future physicians,” said outgoing AMA President Jeremy A. Lazarus, MD. “The AMA is deeply committed to redesigning undergraduate medical education to prepare the medical students of today for the health care of tomorrow.”

Out of 141 eligible medical schools, 119 submitted letters of intent outlining their ideas. Baylor, Texas A&M, Texas Tech, and the other finalists had until May 15 to put the finishing touches on their more detailed proposals, and AMA plans to announce the awards at its annual policymaking meeting this month in Chicago.

AMA says a critical component of its initiative will be to establish a learning consortium with the selected schools to rapidly disseminate best practices to other medical and health profession schools.

Amy Lynn Sorrel is an associate editor of Texas Medicine. You can reach her by telephone at (800) 880-1300, ext. 1392, or (512) 370-1392; by fax at (512) 370-1629; or by email at amy.sorrel@texmed.org.