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Striving for Good Work in General Surgery Education: How Duty Hour Regulations Create Ethical Dilemmas for General Surgery Residents

Abstract

The implementation of duty hour regulations (DHR) by the Accreditation Council for Graduate Medical Education (ACGME) in 2003 was intended to improve patient safety by reducing medical errors by fatigued residents. In this paper, I examine how DHR conflict with norms of the field of General Surgery, including continuity of care and extensive training to master wide-ranging skills, thus creating ethical dilemmas for General Surgery residents trying to achieve excellence. To collect my empirical data, I conducted twelve interviews with members of the General Surgery Department at the Massachusetts General Hospital, including residents, attending surgeons, and the residency program director.

The interviews revealed misalignment between the field of General Surgery and the ACGME. Misalignment emerges because DHR do not take into account the unpredictable nature of surgery and patient recovery, and may inhibit General Surgery residents striving to provide excellent patient care. Because all respondents prioritize patient care over compliance with DHR, residents occasionally exceed their set duty hours. The result is an ethical dilemma for the residents: whether or not to report the DHR violation. While truthfulness is a core value of the profession, repeated DHR violations can result in sanctions by the ACGME including program probation and ultimately loss of accreditation. In these circumstances, though they are aware of the ethical violation, most residents choose not to report the DHR violation to protect their program from further sanction by the ACGME. In general, though, resident discomfort at underreporting lessens over time as residents start to assert their professional authority over DHR.

Introduction

The title of "resident" physician originates from the mid-twentieth-century tradition of physicians-in-training actually living in the hospital, where they were always "on call" for emergencies (Dimitris, Taylor, & Fankhauser, 2008). Over the next few decades, these trainees moved out of hospital-supplied housing, but kept the "resident" title and the work hours. The long hours were rationalized by the Hippocratic Oath and statements of professionalism in medicine, which have enjoined physicians since antiquity to place the interests of patients before their own self-interests. The Declaration of Geneva, a modern revision of the Hippocratic Oath adopted by the World Medical Association in 1948, decree that a member of the medical profession must "solemnly pledge to consecrate my life to the service of humanity," promise that the "health of my patient will be my first consideration," and "maintain by all the means in my power, the honour and noble traditions of the medical profession" (World Medical Association). Consequently, physicians throughout the ages have been expected to be available whenever patients are in need and to possess the necessary cognitive and technical skills to provide quality care.

It is during residency that physicians must develop the expert knowledge and mastery of skills necessary for their specialty. General Surgery (GS), the most broad-based and wide-ranging of all surgery specialties, consequently requires a residency that has historically been among those with the longest duration (5-7 years) and most intense expectations of duty hours. On behalf of the Association of Program Directors in Surgery, Borman and Fuhrman (2009) explain that the "educational needs of General Surgery residents are extraordinarily diverse and include ambulatory and inpatient settings, elective and emergent operations, provision of routine and complex/critical care, cognitive and technical elements, and simulated and live didactic venues" (p.423). Additionally, due to the unpredictable nature of human health, GS residents must develop the capability and confidence to provide their services with little advance notice and at any time, day or night: "residency graduates will be required ethically to respond competently and professionally at all hours to demands by patients and their families for the care of complex and urgent conditions" (Borman & Fuhrman, 2009, p.424). Working many hours, even when compared to residents in

other specialties, has thus become an integral part of surgical training.

In addition to the tradition of long and intense residencies, the domain of GS has a distinct set of norms that differentiate it from other specialties in medicine. One main difference is their dedication to *continuity* of patient care, "from the initial work-up of a surgical issue until complete postoperative recovery" (Morrison, Wyatt, & Carrick, 2009, p.157). Surgeons have traditionally emphasized individual responsibility and autonomy, perpetuating a dogma of personal patient ownership. In contrast, other specialties are inclined to share responsibility for longitudinal patient care with colleagues. GS residents are instead "expected to complete all of their patient-related work individually without assistance from other members on the service or from physician's assistants" (Kellogg, Breen, Ferzoco, Zinner, & Ashley, 2006, p.633). This sense of patient ownership is a core part of the surgeon's professional identity.

Resident Duty Hour Regulations: Intention and Effects

In the 1980s and 1990s, several factors converged to raise concern that the sleep deprivation and exhaustion experienced by overworked residents was leading to medical errors and potentially harming patients. In one highly publicized case in 1984, a healthy college student named Libby Zion was admitted to a New York City hospital with a fever. An unsupervised first-year resident in his 18th hour of consecutive work ordered a narcotic painkiller for Libby that is known to interact harmfully with the antidepressant that she was taking. As a result, Libby died within hours and Libby's father, a *New York Times* journalist and former federal prosecutor, filed a civil suit for wrongful death. The hospital was eventually cleared of wrongdoing because they acted according to "the accepted medical practice" (Robins as cited in Dimitris et al., 2008, p.290), but the case had nevertheless ignited public concern about fatigued residents making lethal mistakes.

Another source of concern was the growing body of research on the adverse impact of sleep deprivation. For example, Landrigan and colleagues (2004) conducted a large, prospective, and randomized study that compared rates of serious medical errors made by first-year internal medicine residents working either a traditional schedule of being on-call (work shift of 24 hours or more) every third night or working an intervention schedule that eliminated on-call shifts and reduced total hours worked per week. The

researchers found that the residents made 36% more serious medical errors during the traditional schedule than during the intervention schedule. Although it is difficult to prove that sleep deprivation directly impairs clinical performance, dozens of studies over the past few decades have supported this theory, finding that most residents experience sleep deprivation (both acute and chronic), which adversely affects their concentration, complex decision-making abilities, and fine motor skills, all of which compromise patient safety (Veazey Brooks & Bosk, 2012).

The increasing public concern and accumulating research prompted patient advocacy groups to lobby for legislated federal regulation of duty hours. To prevent government intervention, the Accreditation Counsel for Graduate Medical Education (ACGME) in 2003 enacted duty hour regulations (DHR) that limited work hours for all residents (Veazey Brooks & Bosk, 2012). Most importantly, the rules stipulate that resident duty hours must not exceed 80 hours per week and have no duty exceeding 24 consecutive hours (ACGME, 2011; see complete list of DHR in Appendix C). To maintain its accreditation, a US residency program must comply with the ACGME's rules.

Although DHR were aimed at improving patient safety by reducing medical errors caused by fatigued residents, these regulations present challenges to patient care and resident education. In patient care, shorter shifts may provide more alert residents, but they necessitate more frequent care transitions between residents, disrupting continuity of care and increasing the possibility of losing crucial patient information in transfer. With regards to resident training, limiting duty hours also limits educational opportunities.

In the past decade, several single-institution studies have found no significant change in mortality or complication rates since the implementation of DHR. Additionally, Morrison, Wyatt, and Carrick's (2009) large retrospective analysis examined the effects of DHR on mortality and morbidity in trauma surgery patients on a national level, across numerous institutions, and found no significant difference in patient outcomes. With regards to resident education, Jamal and colleagues (2011) conducted the most comprehensive literature review to date, and found that DHR did not adversely affect GS resident education, as measured by exam scores and operative experience. As an added benefit, the literature shows

that since DHR were enacted, there has been improvement in resident quality of life: more family time, less depression and emotional exhaustion, and lower risk of motor-vehicle crash (Curet, 2008).

Hutter, Kellogg, Ferguson, Abbott, and Warshaw (2006) conducted a single-institution study of the Massachusetts General Hospital (MGH) Department of Surgery, in which they found results consistent with the surgical literature. After DHR were implemented, GS residents maintained or improved training and education opportunities (measured by case operative volume and exam scores). Their quality of life also improved, with decreased burnout scores, less emotional exhaustion, increased motivation to work, increased ability to maintain relationships with significant others, and more time to sleep and participate in enjoyable non-work activities (Hutter et al., 2006).

The long-term effects of the 2003 ACGME DHR on patient care and resident education remain to be seen, but the growing body of research demonstrating positive short-term outcomes prompted the ACGME to go even further in 2011 by limiting first-year resident duty shifts to a maximum of sixteen hours (ACGME, 2011).

An Ethical Dilemma: How DHR Can Conflict with Norms of the Field of General Surgery

Many researchers have studied the effects of DHR on patient care and resident education, but few have examined the ways in which limiting the duty hours of residents can actually conflict with job expectations, particularly in a hospital-based specialty like GS that deals with more acute and urgent patient conditions than do other specialties. In particular, DHR impinges on the GS domain's emphasis on continuity of care and patient ownership. Residents are expected to complete all of their patient-related work individually, see a patient's case through to the end, and be available whenever the patient is in need. However, DHR require residents to hand off uncompleted work and responsibility for their patients at the conclusion of a duty shift. These conflicting demands "challenge the very core of their own identity" (Kellogg et al., 2006, p.633). DHR rob residents of autonomy, a crucial component of professionalism, and force them to choose between continuing patient care and DHR compliance (Szymczak, Brooks, Volpp, & Bosk, 2010).

The norms of the GS field can thus compete with DHR and lead to residents to exceed duty hour

limitations. They are then presented with an ethical dilemma over whether to report their noncompliance accurately, causing them "angst and internal conflict" (Carpenter, Austin, Tarpley, Griffin, & Lomis, 2006, p.527). Accurately reporting noncompliance could both incur reprisal from seniors and jeopardize their residency program; indeed, repeated violations of DHR can cost a program its accreditation and thus deny residents their very goal of becoming board certified. On the other hand, consciously underreporting duty hours deviates from the professional practice of truthfulness (Carpenter et al., 2006). MacGregor & Sticca's (2010) national survey found that 25% of GS residents consciously underreported work hours, with 16% indicating that they were instructed to do so and 8% advising their juniors or co-residents to do so. A single-institution study at Vanderbilt University Medical Center by Carpenter et al. (2006) found even higher rates of GS residents exceeding work hour restrictions (89%), conscious underreporting (73%), and influence of senior resident expectations (50%); all rates were significantly higher than those of nonsurgical residents, highlighting the particularly conflicting nature of GS norms and DHR.

Duty Hour Regulations: An Obstacle to Good Work in General Surgery Education

Gardner, Csikszentmihalyi, & Damon (2001) define good work as technically excellent, engaging, and ethical. Since DHR sometimes conflict with norms of the GS field, including continuity of care and extensive training, these regulations make it difficult for GS residents to do work that is both ethical and technically excellent. GS residents must either compromise values traditionally important to the domain or act in an unprofessional way in breaking DHR and then underreporting hours worked to avoid putting their program at risk.

Methods

Participants

This study examines a single institution, the Massachusetts General Hospital (MGH), for evidence of competing demands felt by General Surgery residents in the era of duty hour regulations. I was thus able to conduct an on-site study of the program examined by Hutter and colleagues (2006). Additionally, because its GS residency program is widely considered one of the best in the country, the MGH attracts and selects residents that are highly motivated to excel in their field and thus perhaps more likely to exceed

DHR. Indeed, the MGH GS residency program was already put on probation by the ACGME in 2009 for violating DHR. Theoretically, this catalyzed schedule changes to facilitate DHR compliance, but residents may now feel additional pressure to deliberately underreport work hours after exceeding DHR to avoid further action by the ACGME.

To collect my empirical data, I first contacted thirteen members of the MGH General Surgery Department via email to request an interview; twelve were willing and able to participate. The twelve participants included the following: the MGH GS Residency Program Director, four attending surgeons, and seven residents. The program director oversees the training and education of residents. Attending surgeons were included because they trained before the implementation of DHR and because they teach and evaluate residents as the residents rotate through various services on a monthly basis.

GS Residency consists of five required clinical years of training, indicated by Post-Graduate Year 1 (PGY1) through Post-Graduate Year 5 (PGY5). A first-year resident (PGY1) is commonly referred to as an "intern." Most residents also opt to spend an additional two years conducting research between the third and fourth clinical years, for a total of seven years in residency. The seven residents who participated included one resident in her final year (PGY5) of the program (since the 2003 DHR were not truly implemented at MGH until after the program's probation in 2009, this resident did not experience DHR until her third year), three residents who have completed their third clinical year (PGY3) and are in their first research year (their entire training has been under the 2003 DHR), one PGY3 resident (his entire training has been under the 2003 DHR), and two PGY2 residents (as interns last year, they trained under the new 2011 DHR, which limits intern shifts to a maximum of 16 hours). In constructing this sample, an effort was made to include a wide range of ages and levels of responsibility. Six participants are male; six are female.

Data Collection and Analysis

I conducted 15-45 minute interviews with each of the twelve participants either by telephone or in person at the MGH, the participant's home, or a coffee shop. I had two sets of open-ended questions: one set for residents (see Appendix A) and one set for the program director and attending surgeons (see

Appendix B). I asked follow-up questions as needed to clarify information. All interviews were recorded. To encourage candid responses to questions, all participants were assigned pseudonyms for this study.

For analysis, I first partially transcribed the interviews and then color-coded the transcriptions. I originally coded for four topics highlighted in the literature (patient care, education and training opportunities, pressure to exceed DHR, and truthfulness in reporting hours). After completing this coding, I added three categories (delayed autonomy, changes in reporting philosophy over time, and feelings about DHR) and re-coded. I used this coding matrix to organize and analyze my findings.

Findings

General Perception of DHR

All respondents expressed a firm belief that, overall, DHR have been good for the residency program. They were skeptical that DHR have achieved their original intention of improving patient safety by reducing the incidence of medical errors due to resident fatigue, though, noting that the literature has not shown any significant improvements in GS outcomes. However, attending surgeons and PGY5 resident Jane experienced residency before the implementation of DHR and confirmed the findings of Hutter and colleagues (2006), reporting that DHR have improved resident quality of life and decreased burnout.

Dr. Mitchell, the director of the MGH GS Residency Program, also pointed out that DHR "gives the kids a voice," whereas previously, residents felt they couldn't do anything about unreasonable expectations or working conditions, for fear of retribution or damage to their reputation because complaints were seen as a sign of weakness. He noted, though, that although residents now have an avenue for reporting hours, some of that intimidation still exists to some extent. Not all of the older surgeons have fully embraced DHR. PGY2 resident Ben explains, "GS is very formal, very into tradition, so whenever you take something away, it's tough." And while all residents suspect that some older surgeons find them to be inferior because of DHR, they seemed to shrug it off as the natural bias experts have toward inexperienced trainees. As PGY3 resident John said, "I chalk it up to the 'they don't make 'em like they used to'…that's human nature."

Misalignment Between the ACGME's DHR and the Field of GS

Despite appreciating the overall benefit of DHR, many respondents expressed dislike for what they considered the somewhat arbitrary and inflexible nature of the limits, which do not always align with the nature of a GS resident's work. Several residents cited feeling constrained by the rules because they do not account for the unpredictable nature of surgery and patient recovery. Additionally, Dr. Mitchell highlighted that "these rules are not based on any hard data…Does it have to be exactly 80? Can it be 85? Where do you draw the line?...it's just not that cut and dry." Respondents also seemed to bristle at being lumped with all other residencies in "this bureaucratic rule," as Dr. Mitchell referred to DHR, handed down by non-surgeons. John elaborated,

> Right now, it's the *same* amount of hours across all specialties, which is nonsensical. Why does the family doctor need to train 80 hours? And the neurosurgeon be limited to 80 hours? Clearly, learning those things is very, very different. The demands are very different. So I really think that each specialty needs to be considered more independently.

Most importantly, though, residents reported feeling very conflicted when DHR clashed with GS norms for patient care or with their training and educational opportunities.

DHR Conflicts with Patient Care Norms and Expectations of GS Residents

When asked about the core values that characterize a general surgeon, all respondents emphasized an unfailing dedication to their patients. All residents readily stated that, in their work, they feel most responsible to their patients, to provide them with the best possible care. Dr. Mitchell explained that the most important quality of a general surgeon is the suppression of self-interest for the benefit of the patient:

> That's what makes medicine in general, but surgery in particular, a profession, in that no matter how compelling the personal interest – 'I need to go to this meeting or this social event' – if your patient needs you at 2-o'clock in the morning, you get out of bed and you go deal with the problem. It's that sort of commitment to the patient above all else.

All respondents agreed, affirming the Hippocratic Oath's assertion that a patient's well-being should come before the physician's own self-interests. Additionally, with the exception of the most junior residents interviewed (the two PGY2's), all respondents expressed a feeling of patient ownership or, as PGY3 Tracy described, "the sense that your patient is *your* patient and you're responsible for them."

Because they oftentimes deal with unexpected acute problems, general surgeons must be committed to spending long hours at the hospital. They must be available to their patients when needed,

more so than physicians practicing in other fields in medicine. Dr. Mitchell explained that surgery is a unique profession because "things can happen at very inconvenient times, our schedules aren't always predictable, and I think having that commitment to the patient, that bond, that you're there to really be their advocate and take care of them, is overriding." Residents reported an awareness of this commitment when they chose to enter the field of GS and that this aspect of the job actually appealed to them. They all noted that the "commitment to being there around the clock for your patients," as Tracy described it, required them to make many sacrifices in their personal lives. They are driven by their pursuit of excellence in patient care, though. As John said, "my work is all about me learning how to be the best doctor I can be, the best surgeon I can be, to take care of patients."

Dr. Mitchell emphasized that this overriding commitment to patients is the most important value that they strive to instill in residents throughout their training at MGH. Though they don't formally teach professionalism and core values, they transmit the importance of patient care through role modeling. The residents see how invested the attending surgeons are in their patients and recognize how highly valued clinical care is at MGH: "it's amazing how it becomes inculcated over the years – residents learn that it's supremely important to be dedicated to the patient and give the best possible care; anything less than that is just ridiculous, unacceptable."

All residents reported that DHR can conflict with this unfailing commitment to patients, particularly because of the unpredictable nature of human health. The conflict most commonly cited arises when a patient develops complications toward the end of a resident's shift. Tracy explained, "if someone's in critical condition, you cannot get up and leave. It's just not appropriate. Your dedication to your patient comes first in that situation, obviously." Residents were also adamant that critical information can easily be lost in the transition between shifts. As a result, they sometimes felt compelled to stay to provide continuity of care, especially if they participated in the patient's surgery and developed a sense of ownership toward that patient. And other times, residents simply wanted to see a patient's case through to the end. PGY2 resident Liz notes, "sometimes you have really complicated patients and you get pretty attached to how things turn out and you feel like you can't sign out to people or you want to try to just finish it up."

Residents emphasized, however, that this was an "inner conflict," rather than pressure from senior residents or attending surgeons. In fact, all residents reported that when they stayed late in the hospital, attendings and senior residents would encourage or even demand they go home to avoid further action by the ACGME for violating DHR. Attending surgeon Dr. Smith acknowledged that this practice sends residents a "mixed message," where they emphasize the paramount importance of patient care, yet tell residents to leave at the end of their prescribed shift. On the one hand, residents have their program director saying that "the true mark of a professional is someone who is that patient's advocate, no matter what, and at the end of the day, the most important thing is patient care" and on the other hand, they have to comply with DHR.

The program director and attending surgeons were well aware of the potential conflicts between DHR and the residency program's primacy on patient care. Dr. Mitchell sympathized with residents, saying "I feel very bad for the residents, to be honest with you, because it does create at their fundamental core an ethical dilemma." All attending surgeons emphasized that this tension arises out of the residents' desire to excel as doctors. For example, attending surgeon Dr. Brown explained:

> These are highly motivated adults that want to be perfect at what they do. And in surgery, perfection is not measured by the clock. When I go into the operating room, and I'm there until midnight because the case is taking longer than I expected, I still try and deliver the same level of care…and they see that. So if they feel they need to finish something on the floor or make sure that the patient is tucked in, there is an inner conflict within them, just because they *are* good doctors, about whether or not they should leave and pass it off, because they always think that nobody else can do it as well as they can. So I think the conflict is internal, because we have set up for them ways to leave and sign out. But this internal conflict prevents them from letting go sometimes. And sometimes they're right not to let go. Sometimes it's true that they're the only ones who can do something the best for a particular patient.

Additionally, some residents admitted that they sometimes stay past the end of their shift to complete paperwork, such as patient notes or discharge summaries, that they feel would be either inappropriate to sign out to more senior residents or simply inefficient. Liz explained:

> When you're an intern, you feel that way; you wouldn't sign out junior-level work to moonlighters who were covering later. But sometimes it's that the patient has just come in a 6-o'clock, you've completely seen them, worked them up with the attendings, but haven't written the note. It makes no sense for the night team to write that note. They would be re-inventing the wheel. It's inefficient for both, because you've basically done everything but write the actual note, so it would actually take more time for you to sit there, talk to the night team about the patient, have them go see the patient, have them go talk to the night attending about the patient, so it doesn't really make sense.

Overall, residents admitted to feeling two pressures that are sometimes cross-purposes: exceling at their job and adhering to DHR. As Dr. Smith explained, "they want to do a good job, they want to take good care of patients, and DHR has kind of made it harder for them in a way."

The more senior residents interviewed also expressed concern that DHR is creating a "shift worker mentality," especially since the newer DHR implemented in 2011 limits interns to a maximum of 16-hour shifts. To comply with DHR, the MGH started hiring more mid-level practitioners, such as nurse practitioners and physician assistants, to manage the floor during the day. Prior to 2011, it was typically the interns who filled that role, taking care of patients all day long and developing a sense of patient ownership. Now, an intern's prime role during the day is to go to the operating room and assist the senior resident or attending who is operating. Tracy worried that the 2011 DHR will:

> encourage a mentality of 'not my problem, I'm just here for a shift, I don't have the same sort of personal responsibility,' which is probably the thing that is really paramount for surgeons to feel about their patients. It's sort of the foundation on which we offer our services to patients, that while you are my patient, I will do everything I can to take care of you and I will do everything I can to do this operation correctly and appropriately. And if you think that this is just some shift that I'm working, it's not the same.

PGY3 Sarah noticed that, with these shorter shifts that involve primarily assisting others in the OR, interns are reluctant to change the primary team's plan and are there "just to put out fires." Liz, who experienced the increased restrictions last year as an intern, confessed that she enjoys being able to work 24-hour shifts now, because "you see more of what happens, in the continuity of your patients."

Limits educational opportunities. All respondents confirmed the research of Hutter and colleagues (2006). These researchers found that, despite DHR decreasing their workweek from 100-120 hours to 80 hours, GS residents at the MGH have maintained or improved their educational opportunities, as measured by case operative volume. Attending surgeons explained that this is because DHR eliminated a lot of non-educational, "wasted time" in the hospital, where residents were expected to simply wait until their senior resident or attending finished in the Operating Room and dismissed them. John said that previously, residents "might have been in the hospital 100, 110, 120 hours a week, but they had a lot of down time. They slept a lot, there was time in between interactions." Now, residents work "about 99% of

those 80 hours." And most respondents were adamant that this is still enough time to learn the necessary technical skills. As Tracy said, "80 hours a week for five years should be enough to teach *anybody anything*."

However, some residents did express concern that DHR, in restricting how much time they can spend at the hospital, could potentially limit their educational and training opportunities. Tracy pointed out,

> The more exposure you have to things, the better you are at them because you just see it over and over again and then you just do it over and over again. And it becomes an understanding of the way tissue reacts to the way you handle it. There's pattern recognition.

Similarly, Jane didn't view DHR as a direct obstacle, but admitted it could be a hindrance when trying to master something as difficult as surgery. She added, "I do think that the current DHR allow for enough time to certainly become *proficient,* but I think excellence is always going to take extra, no matter what."

Dr. Young did his residency right before the implementation of DHR and averaged about 120 hours a week in the hospital. He said,

> I saw a lot. So I think that's what the residents feel conflicted about. They know that if they go home and follow the duty hour guidelines, they're going to miss things. They're going to miss cases. They're going to miss follow-ups on patients. They're going to miss chances to do procedures.

Dr. Young also pointed out that advances in surgical technologies and the expanding body of knowledge in the field have significantly increased expectations for GS residents in the last twenty years. He directed me to the "SCORE Card," a national curriculum for GS residency developed in 2006. It says that GS residents are expected to learn 72 modules of medical knowledge, 142 operations and procedures, 248 diseases and conditions, and 29 systems-based practices over the course of their five-year residency. Dr. Young estimated that, over the past two decades, due to the development of laparoscopic surgery techniques, the number of operations and procedures expected has roughly doubled.

A few residents confirmed this occasional fear of missing out on educational experiences. For example, Sarah reported that older surgeons have told her that they feel strongly that DHR have impaired the technical skills and competency of trainees. And she did sometimes feel conflicted:

> there were definitely times where I wanted to come in post-call to see a case, or wanted to stay post-call to see what happened to a patient, and I just felt like it's not really accepted anymore and it would be frowned upon. Even though I would get into trouble, I did that.

By and large, though, residents felt as though 80 hours a week provides ample opportunity to learn the expected operations and procedures, due to the MGH's large clinical volume.

All respondents noted the trend that GS residents increasingly feel compelled to pursue fellowships following residency to continue their training; about 90% do so now. But this is only partly due to DHR restricting their time in the hospital at the very time when the knowledge base and technical skills of their field are expanding. Respondents emphasized that this trend has two other significant contributing factors. The first factor is societal demands; patients increasingly want highly specialized physicians. As Dr. Mitchell explained, patients are saying, "I don't want to go to someone who's a jack of all trades, but a master of nothing – it's my life! I want the best!"

The second factor has been the change in the supervision paradigm of residency programs. Dr. Young explained that, around the same time that DHR were implemented to improve patient safety, insurers also responded to concerns by prohibiting attending surgeons from billing for an operation if they not physically present during the operation or didn't do all the critical portions. As a result, at the same time that their time in the hospital became more limited by DHR, residents lost opportunities to develop their independence and autonomy. Attending surgeon Dr. Davis said that trying to balance societal demands and insurer requirements with providing a resident with progressive independence over the course of the residency is much more difficult nowadays.

Many respondents cited this loss of autonomy as the primary reason for graduates still feeling unprepared to operate by themselves and pursuing a fellowship to get more independent operating experience. Sarah explained,

> It's very uncommon now to have a case where an attending isn't present for the entirety of the case. And I think in the olden days, it used to be that chief residents or senior residents, even, walked interns through cases and it led to a lot more autonomy, and probably some scarier moments, but the unfortunate part is that's kind of where you learn…if you have an attending there, the attending tells you exactly what to do. And if something goes wrong, it's the attending's fault, not yours. So I think we've also seen a decrease in self-confidence and competency, because we're not forced to do these cases by ourselves.

Jane has also noticed this trend in loss of autonomy and the resulting decreasing competency of residents, saying, "I do see delayed progress, in terms of what their comfort level is doing things." She thought that by this stage in her internship, she was functioning more independently than interns currently; by her third year, she remembers performing certain procedures more independently than current junior residents.

DHR may be contributing to this loss of autonomy for junior residents, though. Liz pointed out that as interns unable to work 24-hour shifts, "our autonomy's delayed; you're not by yourself in the middle of the night, dealing with patients on your own." She also noted that DHR has prompted the hiring of more mid-level providers, like nurse practitioners and physician assistants, to take care of patients outside the OR and that has "totally changed the dynamic of how we deliver care. In terms of navigating that whole space as a junior resident, your autonomy gets delayed because you're never really by yourself." Additionally, with DHR disrupting continuity of care and patient ownership, Dr. Young admitted that attending surgeons may be disinclined to allow residents opportunities to practice their technical skills:

> So if, as the attending surgeon, I'm going to be willing to give the resident the case and let them do it, the least I would expect is that they know something about the patient and they've been taking care of the patient. But if you think about it, because of the 80-hour workweek, that doesn't even hold true anymore. Literally, the resident could have just started their shift. And that's happened to me all the time. They just walk in and it's like, 'hey, I just took over from so-and-so, they told me about this patient, I'm here to help you.' And it rubs the attendings the wrong way a little bit, this idea that 'hey, I just came on and I'm going to get to do the operation.'

An Ethical Dilemma: Whether to Report a DHR Violation

Residents reported feeling very conflicted when DHR are at cross-purposes with their commitment to patient care or their surgical training. If they choose to break DHR, they are then left with a difficult decision of whether or not to report the violation. While consciously underreporting hours was viewed as ethically wrong by residents, they did report feeling pressured, either implicitly or explicitly, to do so to protect their program from further sanctions by the ACGME following their 2009 probation. For example, Tracy explained that during her intern year (in 2010), the Surgery Department had a meeting to address DHR violations by the interns and "one of the senior residents said, 'make the red go away,' meaning, whatever you're working, I just don't want to see it reported as a violation." Tracy admitted that this seriously conflicted with both her personal values and her professional goals of honesty and truthfulness:

> So much of what I value, or what you learn as a surgery resident, is that you should never lie. That is one of the biggest things. Always get your work done, but never lie. If you don't do something or you don't see something, or if something slips your notice, you just have to own up to it. It's hard. It's easier oftentimes to say, 'yeah, I saw this patient, or I did this, or the white count is this,' but you *can't* do that. You *cannot* lie in any way, shape, or form. Otherwise, decisions aren't made with appropriate information and then problems happen and your reputation as a person is really suspect if you do stuff like that. I think that's the only reason people have been asked to leave our program, because of lying. Having said that, it was a hard thing to learn, that the work hours are just slightly outside of that. And it is painful for people who value honesty and for a profession that values honesty.

The other senior residents also recalled feeling explicit pressure as junior residents to report compliance with DHR. Kate said that senior residents made it quite clear during her intern year that if she accurately reported DHR violations, then they would make her go home at the end of her prescribed shift, whether or not she had patients to care for, work to complete, or educational opportunities to take advantage of. Kate said this pressure to lie about her hours made her "miserable" and she simply refused to log hours for a while. Sarah reported that when she was an intern, she felt that lying about duty hours was "extremely ethically wrong. I felt very morally conflicted, that we were being evaluated on our integrity as interns, but we were also being encouraged to lie about our work hours."

John admitted "there's still a lot of pressure on us to report that we're not in violation of our hours, and it's explicit." He believes many residents underreport their hours, based on observations, of certain residents repeatedly staying late at the hospital without any response from the program director. Jane also remembers having more DHR violations as a junior resident and feeling pressure not to report them, but believes the situation has improved. To corroborate that, the two PGY2 residents, Ben and Liz, did not report any explicit pressure from senior residents not to report violations.

Dr. Young explained that even in the absence of explicit pressure, the current GS resident is "very conflicted." When DHR compete with professional goals, residents "feel that the choice is either they lie and say they went home and stay and go to the operation, or they tell the truth and actually leave." Rather than compromise patient care and their pursuit of excellence, residents compromise compliance with DHR. Dr. Davis said he thinks underreporting is "ubiquitous" because of this conflict. Dr. Mitchell explained:

> I think that they recognize that they want to be good, they want to be seen as good, and sometimes that requires, well it doesn't require but it's certainly easier to demonstrate if you stay a little late, or come in a little early so you're more prepared than the hours might allow for. And it is a fundamental tension,

> and I feel bad, and so I don't, you know, yell at them for breaking hours, because I know how uncomfortable they must be in this position.

Change in attitude over time. One theme that emerged in the data was that residents experience a change in attitude toward underreporting. During the first year or two of residency, they reported feeling conflicted. However, their attitude changed as they moved through residency and senior residents no longer felt as conflicted breaking DHR or underreporting hours. This change occurred not because they were desensitized to violating their ethics, but for two main reasons: for pragmatic reasons and because they started to assert their professional autonomy over what they view as constraining external regulations.

Pragmatic reasons for not reporting DHR violations included wanting to protect the program from further sanction from the ACGME following their 2009 probation and, more commonly, wanting to avoid the paperwork or meetings that result from reporting a violation. Sarah explained,

> I think there's a trend, there's a shift. You'll typically see interns log their hours accurately because that's what they're told to do. And then everyone realizes as they move on through their training that it really doesn't benefit anyone to log their hours accurately. All it does is get your program in trouble. So you can either be better about getting out on time and stay within the 80 hours, or you can break the 80-hour workweek and just not log it.

Tracy agreed that there is no benefit in reporting a DHR violation. She reasoned, "sometimes you're not fully compliant within DHR, but as long as you're within the spirit of it, I feel like it's okay and you try to record it to reflect that." Other residents and Dr. Mitchell cited the extra paperwork and meetings required for justifying a reported violation to explain why older residents stop reporting violations. For example, Liz said, "I don't think people report accurately. I don't think they want to have to be bothered with all the meetings and things that come about…those kinds of conversations get tiring."

More importantly, respondents reported that after a year or two of training, they started to assert their professional autonomy and judgment over this "bureaucratic" or "silly" rule. They emphasized that when they exceeded DHR, it was a personal choice. They wanted to stay, either to care for a patient or to take advantage of an educational opportunity. Therefore, they didn't feel as conflicted in underreporting their hours because they view these extra hours as extracurricular or personal time. For example, Sarah said

that when she stays late to see a case, "I sort of see it as extracurricular work. No one's forcing me to be there, so I'm doing it of my own volition. Therefore, I'm not logging it as work hours." Jane agreed:

> No one's making me do anything. There are mechanisms by which, if I really wanted to leave or sign something out to somebody else, I probably could have. I don't view them as coercion by any stretch. I think we have a lot of leeway in doing what I think is right and, basically, if I think staying here is the right thing to do, or that I want to be involved in something, then I just do so. And thereby, I don't think that's a reportable issue, because I've made the choice and I don't feel like my judgment was impaired or that I was too tired to be there, or that somebody was making me do it.

Dr. Mitchell also noticed this trend, noting that senior residents are "more philosophical about it." They stay because they think it's best for the patient, and they'd rather break DHR than "break the code of 'I'm the doctor for that patient,' because that's a higher ethical standard, I guess, in their mind." He noted that interns are more conflicted because they're newer to the system and "very junior in their professional career." They don't want to disappoint him by violating hours, but they don't want to provide anything less than superlative patient care or fail to complete their work. But Dr. Mitchell noticed, "as they move through, increasingly they become less concerned about rules and regulations, and start looking at the bigger picture."

Attending surgeons agreed with Dr. Mitchell, acknowledging that residents are likely not reporting violations because they *choose* to stay. Dr. Young described this situation as a middle ground that DHR does not account for, in which residents officially sign out, but opt to stay on their own time. He asks,

> if GS residents are adults, which we know they are, shouldn't they be able to determine what is work time and what is personal time? And if they *want* to give up some of their personal time, to do things that they feel would enhance their training or enhance their abilities, isn't that okay? Just like they might use their personal time to learn to play the guitar; it enhances themselves as a person and they give up their own time.

Dr. Brown added that if residents feel that they made the decision to exceed duty hours completely by themselves, they would be less likely to report the violation than if they felt that they had been pressured to stay. She does not worry about the ethical implications of underreporting, though, because "it is the person with this very, very acute sense of their responsibility that may sometimes be breaking these rules."

In summary, residents appreciated the overall concept of DHR, but sometimes found the rules limited their decision-making about their training and professional autonomy. Jane recapped:

> I guess a lot of us in the field appreciate some level of autonomy and want to do our job the way we want to do our job. General surgeons, I think, enjoy the aspects of professional autonomy perhaps a little bit more than other physicians. It's sort of part of the culture to work a little bit harder than the rest, it's part of the culture of being a general surgeon. I think a lot of us look at DHR as being kind of constricting and regulate us in a way that we don't necessarily want to be regulated.

Discussion

Gardner, Csikszentmihalyi, and Damon (2001) define good work as excellent, engaging, and ethical. It is distinct from bad work, which is unlawful, and compromised work, which Gardner (2005) defines as "work that is not, strictly speaking, illegal, but whose quality compromises the ethical core of a profession" (p.43). The distinction between good work and compromised work is particularly pertinent to understanding GS residency in the era of DHR because although no laws are broken, residents are sometimes forced to choose between pursuing excellence and upholding their ethical values.

This inner conflict occasionally faced by GS residents is a prime example of Gardner's (2012) "ethics of roles" predicament of modern society. While traditional moral codes have long governed our behavior toward people whom we know ("neighborly morality"), the way we should treat those with whom we have a work relationship (the "ethics of roles") is less clear. As modern-day roles become more finely articulated and involve increasing numbers of stakeholders, the ethics of a responsible professional becomes increasingly complex. In this case, the implementation of this external set of rules put into conflict two complementary roles of the GS resident: patient advocate and member of an institution. Before DHR, these roles had the same primary goal of providing the best possible patient care, regardless of how much time it took. Now, DHR sometimes conflict with GS norms of continuity of care, patient ownership, and extensive training. In these instances, GS residents are forced to choose one role over the other, either prioritizing their responsibility to patient well-being or their adherence to the regulations imposed by the professional organization tasked with overseeing professional education in their field.

Because of its GS residency program's superlative reputation, the MGH attracts and selects residents that are highly motivated to excel in their field. These residents want to be the best of the best, in one of the most demanding medical specialties. They strive to provide optimum patient care and develop superior technical skills during their training. They are not afraid to devote more time to achieving these

goals, but DHR now limits them from doing so and consequently "minimizes the quest for excellence," as Dr. Mitchell contended. Furthermore, the residents enjoy surgery and find it to be engaging work. This engagement and pursuit of excellence, however, leads to compromised work. They sometimes exceed DHR and then consciously underreport their hours to avoid putting their program (and their own futures) at risk, thus violating their ethical values and professionalism.

The ethical dilemma facing GS residents highlights a misalignment between the ACGME and the field of General Surgery. Residents feel conflicted, particularly in the first years of their program, because the structure of DHR do not always account for the expectations and demands of a GS resident's job. The trend of residents feeling less conflicted over time also demonstrates that the field is still prioritizing values traditionally important to the domain, rather than adherence to external regulations. It is notable that the MGH has made great efforts to implement DHR in an effective way, with the hiring of mid-level practitioners to care for patients and developing supplemental educational opportunities like simulators and a mock operating room. Nonetheless, residents still experience instances in which compliance with DHR conflicts with their professional goal of becoming surgeons who possess excellent technical skills and provide superlative patient care.

It is troubling that, in their pursuit of excellence in socially responsible and engaging work, residents feel they have to compromise their ethical values. It is particularly disconcerting in a profession that places a great importance on the need for truthfulness at all times. However, surgeons do face other "ethically gray areas" in their work, such as whether to change a patient's indication in order to get approval and payment from an insurance company to do a certain test or perform a procedure. Perhaps this ethical dilemma faced by residents in the era of DHR is only the first of many they will face throughout their careers. In a field where lives are at stake, though, it is vitally important to consider the extent to which we can trust the professional's judgment rather than strictly hold them to over-expanding rules and regulations. Furthermore, both resident and attending surgeons are subject to self-delusion. They may think that their performance is unimpaired after a 36-hour shift or a 100-hour workweek, but there is growing evidence that performance deteriorates under such demanding schedules and sleep deprivation.

It remains to be seen whether the ethical dilemmas facing today's residents will result in changes in the professional identity of tomorrow's surgeons. With a 5-7 year residency, plus a 1-3 year fellowship for most, residents who trained under DHR are only just now starting to become attending surgeons. For the MGH, where DHR were not truly implemented until 2009, it will be at least a few years before affected residents finish their training.

Validity/Limitations

This study is but a small snapshot of a single U.S. institution. The twelve participants are only a fraction of the GS Department at the MGH and thus the findings of this study cannot be generalized to all general surgery residents nationwide. Additionally, there are biases in this research. First, my sister is a GS resident at the MGH and is one of the interviewees. Furthermore, she gave me the contact information for resident and attending surgeons within the department who might be willing to give up their time to talk with me, despite their busy schedules. As such, this is not a random sampling of members of the GS Department. However, in constructing this sample, a concerted effort was made to minimize this bias by including a wide range of ages and levels of responsibility.

Interestingly, my personal opinion about DHR changed drastically throughout the course of this project. I originally chose to study the effects of DHR on GS residency because I thought residents were being pressured by their seniors to exceed DHR and underreport their hours, unable to protest for fear of retribution and damage to their reputation. However, throughout the course of writing my literature review and conducting my interviews, I discovered that the pressure to exceed duty hours comes mostly from within. It is an inner conflict for young professionals trying to achieve excellence in their chosen field.

The findings of this project present several possible avenues for future research. With more time and resources, I would have included in this study the perspectives of more members of the GS Department at the MGH, particularly interns, more senior residents, more attending surgeons, and perhaps the heads of various surgical departments (the bosses of the attending surgeons). It would certainly be enlightening to expand the study to include other institutions, where the implementation of DHR may have been approached in different ways than the MGH's strategy of hiring more mid-level providers and requiring

residents to self-report hours worked. And it may be the case that residents in other, less selective GS residency programs are not as motivated to "go the extra mile" in patient care and therefore do not face the same ethical dilemmas as the GS residents at the MGH.

Conclusion

In many ways, we look to medicine as the model profession. Gardner & Shulman (2005) describe six characteristics of a profession, and medicine offers an ideal example of all of them:

> A commitment to serve in the interests of clients in particular and the welfare of society in general; a body of theory or special knowledge with its own principles of growth and reorganization; a specialized set of professional skills, practices, and performances unique to the profession; the developed capacity to render judgments with integrity under conditions of both technical and ethical uncertainty; an organized approach to learning from experience both individually and collectively and, thus, of growing new knowledge from the contexts of practice; and the development of a professional community responsible for the oversight and monitoring of quality in both practice and professional education. (p.14)

This study highlights how the implementation of DHR has perhaps threatened a surgeon's ability to make judgments with integrity under conditions of ethical uncertainty, forcing the surgeon to do compromised work. DHR has also uncovered a disconnect between the field of GS and the ACGME, the professional community responsible for the oversight of professional education and training. Thus, even this model profession presents misalignment and ethical dilemmas.

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Appendices

Appendix A: Interview Protocol for Residents

1. What attracted you to medicine?

2. What about to GS in particular? How would you describe the professional identity of GS?

3. Is that what still appeals to you about it?

4. In your work, to whom or what do you feel most responsible?

5. Physician's oaths and statements of professionalism in medicine (ex. Hippocratic Oath) proclaim that a physician is expected to place the interests of patients before one's own self-interests. Should patient well-being and the GS emphasis on continuity of care take primacy over a doctor's personal interests? To what extent?

6. Are DHR an obstacle to achieving technical excellence, according to the current norms of the field of GS? Why?

7. As a result, do you think that residents ever feel pressured, either implicitly or explicitly, to exceed the duty hours quota? Why?

8. If resident exceeds duty hours, should he/she accurately report DHR violation or underreport hours? Why?

9. Do you think it is ethically wrong for the resident to lie about hours worked?

10. What effect, if any, do you think DHR will have on the future of GS?

11. Is there anything I haven't asked you about that you think might be relevant to my study?

Appendix B: Interview Protocol for Attending Surgeons and the Program Director

1. How would you describe the professional identity of GS?

2. How well does the MGH GS residency train residents in both technical skills and non-technical norms of the field?

3. Do you feel it's your responsibility to transmit these qualities and values to residents, either through words or through deeds?

4. What is your impression of the young people entering GS today? In what ways (if any) are they different than in the past? Would you change anything about young people in GS?

5. Are DHR an obstacle to achieving technical excellence, according to the norms of the current field of GS? Why?

6. As a result, do you think that residents ever feel pressured, either implicitly or explicitly, to exceed the duty hours quota? Why?

7. Do you think GS residents sometimes violate DHR but underreport hours? Why?

8. Do you think it is ethically wrong for a resident to lie about hours worked?

9. What effect, if any, do you think DHR will have on the future of GS?

10. Is there anything I haven't asked you about that you think might be relevant to my study?

Appendix C: ACGME Duty Hour Regulations

The 2003 DHR stipulate that residents must:

- not exceed 80 hours per week, inclusive of all in-house call activities,
- have at least 1 day in 7 free from all educational and clinical responsibilities,
- have at least 10 hours between all duty periods,
- be on-call no more frequently than every third night, and
- have no on-site duty exceeding 24 consecutive hours plus up to 6 additional hours to participate in didactic activities, transfer care of patients, conduct outpatient clinics, and maintain continuity of medical and surgical care (ACGME, 2011).

The 2011 DHR add that PGY1 residents may not have any duty longer than 16 hours (ACGME, 2011). To provide flexibility, duty hours are averaged over a 4-week period and a Residency Review Committee (RRC) may grant exceptions for up to 10% of hours "based on a sound educational rationale" (ACGME, 2011, p.5).