Imperfect by design: the problematic ethics of surgical training

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ABSTRACT

There exists in academic medicine a core ethical issue that is seldom pursued: trainees are frequently not the best person in the operating room at a given intervention being performed, and yet as a profession we understand a fundamental need to afford them opportunities to perform. Academic centres are traditionally associated with a higher quality of care than non-academic centres, suggesting that practical measures exist within teaching hospitals that effectively mask the clinical discrepancies between trainees and their preceptors. Nonetheless, we are bound by our ethical commitments as physicians to balance the obligations of care with the duty to teach. In order to ethically validate the model of 'surgeon as teacher', we propose that there must be a reconciliation of the tensions between traditional professional values in medicine (which tend towards individualist deontology and the provision of optimal care tailored for each patient) with the constraints inherent in a time-bound utilitarian medical system (in which resources are limited and surgeons are transient). Ultimately, we must consciously accept that ensuring the longitudinal availability of skilled surgeons in society aligns more closely with our core ethical obligations as outlined in the social contract that medical professionals maintain with the general public than does the ethical demand to provide unreservedly individual-focused patient care. It is the duty of individual practitioners, as a necessity of lineage to maintain and fulfil our greater duties to society, to foster deontological relationships where possible within this utilitarian system while accepting short-term imperfection in our practice.

Key points

- Question: How do we ethically validate the current training model for surgeons, in which trainees are often given operative duties that could likely be better handled by a staff physician?
- Findings: The deontological responsibilities of individual surgeons are incommensurable with the fundamentally utilitarian nature of the medical system.
- Meaning: Surgeons as individuals must be willing to accept that they are knowingly foregoing optimal patient care on a small scale, and navigate the trade-offs which exist at the interface of two (possibly irreconcilable) philosophical systems.

INTRODUCTION

Modern medical education bears many similarities to a traditional apprenticeship model, with trainees learning and practising under the supervision of a preceptor for several years while developing their own skills. For this reason among others, medical residents make up a significant proportion of the clinical workforce in any academic hospital. A majority of patients do not object to being treated by residents rather than staff physicians.[1 2] Further, these teaching hospitals often provide a higher quality of care and better patient outcomes than their non-teaching, community hospital counterparts.[3–7] We postulate that this trend is multifactorial in aetiology, but may in part be a product of environment: patients in academic centres are surrounded by many doctors thinking—sometimes incongruously—about their care, and this breadth of thought tends to result in patient benefit.

In a surgical setting, however, there is less clarity regarding patient outcomes in teaching versus non-teaching hospitals. While some reports have shown reduced rates of adverse outcomes in teaching hospitals for several complex procedures, such as hepatic, oesophageal, pancreatic and pulmonary resections,[8–10] other studies have found the contrary for more routine operations, such as hysterectomies and total hip replacements.[11 12] Three distinct, parallel explanations emerge to describe the source of this discrepancy. First, findings that risk-adjustment narrows the divide in surgical mortality rates between these centres suggest that patients treated in academic hospitals carry a higher burden of intrinsic risk.[13] Second, evidence identifying both hospital and surgical volume as predictors of surgical mortality favours a 'conveyor belt' model, grounded in the theory that practice makes perfect.[14] Finally, teaching hospitals employ surgical trainees.

Trainee involvement could be postulated to contribute to greater risk of adverse surgical outcomes at teaching hospitals. To the contrary, clinical equipoise is widely reported for numerous interventions across various levels of training, including between trainees and staff surgeons.[5] A lack of association between surgical trainees (vs staff surgeons) and adverse surgical outcomes has been reported for many operations, including pancreatectomies, appendectomies and cholecystectomies.[9 15–18] Even across the stages of training within a given surgical residency, aside from a tendency for longer operative times in procedures in which resident trainees are involved,[16] a lower level of seniority is not associated with an increased risk of adverse outcomes for procedures such as coronary artery bypass grafting.[19]

In light of the evidence that patient outcomes for operations performed with residents are effectively

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indistinguishable from those performed by staff physicians alone, we conclude that one of the following explanations is necessarily true. First, it is possible that medical education is an ineffective system and there is truly no measurable benefit in terms of surgical outcome that results from the training which occurs on the path from residency to staff surgeon appointment. Alternatively, clinical equipoise across the levels of surgical training can be explained by a system of internal checks and balances that mitigate what is a real discrepancy in surgical skill between these two groups. We propose that it is simply not plausible that incoming surgical trainees gain nothing from years of training, and that the latter explanation is overwhelmingly intuitive: surgical education in its current form is operating in such a way that residents are often dealt a stacked deck, by which we mean that even in those studies reporting clinical equipoise, trainees are typically tasked with performing the 'less risky' aspects of a procedure, and often have staff physician oversight and assistance with the most difficult steps. Staff physicians accept responsibility for the outcomes of procedures performed by residents and intervene when necessary. In the interim, surgical trainees progress through parallel iterations of increasingly challenging technical steps, such that they are posing minimal risk to patients and only advance in their training when they are deemed ready to do so by their preceptors.[20] While formal competency-based curricula have become *en vogue* in postgraduate medical education, we would argue that a competency-based approach has been the dominant model of learning in surgical training since the 20th century.[21] To put it another way, a variety of practical workarounds exist to ensure that trainee surgeons do not pose irreversible risks to their patients, even if they are less technically skilled than their preceptors.

Nonetheless, an ethical problem exists here masked beneath these measures: the incommensurability between the concept of 'good medicine' as an uncompromising venture pursuing the best interests of the individual patient in each present moment, and the systemic and social responsibility of the profession on a broader scale of time to train new surgeons. At one extreme, this problem may be considered practically as a dilemma of whether residents ought to be given opportunities to operate even when this allowance is suboptimal for their patients.[20] Despite the steps we make to compensate for the repercussions of inviting residents to participate in surgeries, it is likely the case that higher-quality care could be afforded to patients—who, it is expected, would elect for this were it an option presented to them—by surgical teams composed exclusively of staff surgeons. Practical solutions to the ethical tensions surrounding trainee surgeries do not excuse us as a profession from thinking critically about them. However, while an exclusion of trainees from the operating room may be logistically plausible in the short term, in the long term we would run out of surgeons.

INDIVIDUALIST VALUES IN MEDICINE

A social contract binds all medical professionals to ethical service, constituting an agreement by which the profession is granted autonomy and self-regulation in exchange for its commitments to satisfy the expectations of the greater public.[22–24] Consequently, medical professionals are both tasked and privileged with the responsibility of creating and upholding their own values as a professional body, reflecting public interest, even in the face of opposing pressures and incentives such as corporate gain.[25]

Professional ethics in medicine are traditionally deontological, reflected in a set of humanistic duties integral to the success of small-scale relationships like the doctor–patient unit.[6] The ethics of medical practice has taken manifest in many forms, from the Hippocratic Oath,[26] to Thomas Percival's Code of Ethics,[27] to the CanMEDS roles.[28] A common thread through all of these renderings is a predominant concern for the patient, and an affirming response to the public expectation that medical professionals will offer the best possible care irrespective of other motivations. As an identifiable piece of the medical system, medical trainees are not excepted from these ethical duties. In fact, the integrity of the social contract depends on the expected belief that trainees are motivated by the same sense of responsibility and need to 'do right' as their mentors.

Patient-centred care is a major focus of contemporary medical ethics, but continues to pose several questions which resist consensus. For example, what limits—if any—are we willing to put on the lengths to which we will go for high-value care? It is our experience that few patients will consent to resident-performed operations if they have both an unobscured recognition that they will be operated on by a penultimate surgeon and a viable alternative: patients, understandably, want the best. It is plausible to suggest that if staff surgeons performed the operations otherwise offered to residents, they may have even lower rates of intraoperative and postoperative complications. It would therefore seem as though an exclusion of medical trainees from practice would in some ways suit the deontological values of the medical profession, which requires that patients receive the absolute best care we have to offer.

UTILITARIAN VALUES IN THE MEDICAL SYSTEM

In contrast to the above, the system in which physicians work is starkly utilitarian. Providers work under the constraints of limited resources as stewards of a system tasked with maximising societal—rather than individual—utility.[7]

Medical trainees are an expression of this same utilitarianism. In any conceivable system, every training surgeon will at some point perform their first surgery—or their first of each type. In these moments the profession is choosing to forego its deontological commitment to individual patients in favour of some higher ethical imperative: that of the future success of the medical system. It is worth noting that this ethical problem is not exclusive to surgical residents: trainees of other medical specialities, and indeed staff surgeons who do not refer their patients to other staff surgeons with better surgical outcomes,[20] all engage in making this same decision to put the success of the medical system above individual patient outcomes. The issue of trainee medicine is not an isolated phenomenon—parallel shortcomings in the ethics of care can be found throughout the field of medicine where, constrained by time and resources, we are rarely able to offer our absolute best.

RECONCILIATION

The fundamental lack of synergy between the deontological and utilitarian can be reconciled pragmatically but not ethically because although this discrepancy appears to be practically masked by system measures which preferentially place trainees in low-stakes situations, an ethically committed surgeon must be willing to accept that they are making a value judgement of real consequence: choosing to forego, to some extent, the best interest of their individual patients in favour of the long-term success of the medical system. To again return to an analogous scenario, every time that the individual in the operating room (or by logical extension the hospital, or the country, or the world) who is the most adept at conducting a given operation

is not the individual who is performing that procedure, we are choosing the advantages of a utilitarian training system over the belief that each patient deserves the absolute, uncompromising best that we can provide.

The advantages of the utilitarian system are not insignificant, however, and chiefly include the assurance that highly skilled surgeons will exist when the current surgeons cease to practice. Foregoing optimal care for individual patients in the present ensures the longitudinal availability of good care, minimising the volatility in surgical quality that would feature in a training model wherein trainees did not conduct their first operation until they by default became the best at their craft—when their predecessors retired or expired. By leveraging the skill of our existing surgeons as clinician-educators, surgical residents can take advantage of opportunities to learn in a relatively controlled setting before the stakes increase. This ethical issue is a necessary evil willingly—or unknowingly—shouldered by patients, because although those treated in academic centres may concede to being operated on by the second-most or even third-most skilled surgeon in the operating room, they avoid the possibility of having chance and timing determine whether they will be operated on by the greatest staff surgeon of all time or a new contender in the surgical suite without any prior operative experience on human patients.

Utilitarianism and deontology are in fact in agreement insofar as they share a recognition that the concept of perfection is in some circumstances abstract and unattainable, and strive nonetheless to guide human action in the best possible way. But they disagree about the precise definition of 'best'. Previous works attempting to reconcile these competing strands in medicine suggest that there is practical value in considering and weighing judgements rooted both in utility and in justice, in the process of clinical decision-making.[30 31] Garbutt and Davies caution that deontological care is stretched thin at present by a medical system leaning too heavily towards the utilitarian approach, and defend the claim that deontology ought to be the primary focus of individual doctor–patient relationships, even if it is imperfect by virtue of either its variability or inefficiency.[30] With a mutual understanding between physicians and patients that the healthcare system is fundamentally utilitarian and harbours certain resource constraints, it is possible through deontological care to establish trust—despite the system in which it exists, which seldom puts patient care first—and this trust is paramount to the therapeutic success of these relationships, and the ability of physicians and patients to profoundly engage with each other.[30]

In the stead of a healthcare system which adopts a deontological approach to care within a broader utilitarian society, it therefore appears as though the responsibility of creating an environment conducive to patient trust falls to individual physicians who each can be thought to represent an eye in the storm for their patient roster, by striving to act deontologically and in the best interests of these patients within a system that limits these actions. Although we must accept that it is not possible to refer every patient to only the best surgeon, to spend hours in every consult or to provide the most expensive treatments, we cannot ignore that there are still deontological freedoms in the doctor–patient relationship that all physicians are at liberty to seize on behalf of their patients. We contend that there is therefore a role for the modern physician as a mediator of the tensions between a necessary (from a system perspective) utilitarianism and similarly necessary (from a patient perspective) deontology: in thinking and acting critically as an individual player in a larger system, in accepting those features of a utilitarian system to which there is no viable alternative, and also in pushing back against those features when it is possible to do better for a patient. Providers can continue to satisfy the most fundamental tenets of medical ethics and practise genuinely deontological care by recognising the philosophical separation between self and system, and accepting that short-term imperfection is a necessity of lineage in order to maintain and fulfil their greater duties of society.

CONCLUSION

A divide exists between the traditional values of deontological medicine and the utilitarian ideals of the modern medical system. This becomes apparent when surgical residents, who are unlikely to be the most skilled members of an operative team, are afforded educational opportunities to advance their skills in real-world clinical situations, although with close supervision. Myriad advances in the way that surgical training takes place attempt to bridge this divide, and approaches rooted in both technology and policy have evolved to maximise the efficacy of trainee-performed surgery. These include the development of more robust educational curricula for learners, the uptake of new technologies that allow for skill-building without patient risk (eg, surgical simulators, realistic learning models or clinical scenarios, and live or semi-live surgery demonstrations) and the application of competency-based learning models wherein trainees progress gradually through increasingly challenging cases as they are deemed ready to do so by preceptors.[32]

Ultimately, however, the existence of practical solutions to the possibility that trainees will compromise patient care does not excuse us as a profession from thinking critically about the ethical tension arising in these situations—even those who practise in non-academic centres and therefore have a degree of separation from this tension, as their training also necessarily makes them participants in the academic system. While there is strong evidence to suggest that interventions such as surgical simulation are increasingly effective tools for ensuring that surgical trainees meet a threshold of technical expertise before they conduct their first operation,[32 33] there is still always going to be a first operation. With the development of new approaches to enhance surgical training, we as a profession only become further removed from important pressures to actively engage with the ethical issue that perpetually underpins trainee medicine: imperfect care by design, on the scale of individual patients, in order to maximise the quality of care available to all patients on a scale of time that transcends individual surgeons.

Trainee medicine is a necessary feature of an enduring healthcare system. It presents a net benefit to future patient care which—from a utilitarian perspective—outweighs the burden it places on current patient care. Despite the inevitability of imperfect care and systems-level policies that do not always favour individual patients, and therefore contribute to the erosion of public trust in the profession of medicine, we maintain that there is an important role for individual physicians in recognising this divide. On the scale of individual doctor–patient relationships, there is an opportunity—and a fiduciary duty—to preserve and foster deontology in a system that may disfavour it.

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