Hippocratic Economics (the Physician's Dilemma)

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The nature of the medical profession puts physicians in an unusual position. Patients seek out physicians' help because of their expertise in dealing with illnesses, possibly even life-threatening ones. The asymmetry of knowledge in this relationship, the expert physician and the inexpert patient, creates an ethical dilemma for physicians regarding the delivery of care. Physicians determine how much care to offer while receiving remuneration for this care. Here, acting as patients' agents, physicians have immense discretionary power not only with patients' health but also with their pocketbooks. Known as the principal-agency problem, this type of relationship is part and parcel of what business scholars refer to as moral hazard. This article explains the problem of moral hazard and how it affects radiologists and places it in the context of professional and ethical behavior. Its causes and relationship to human nature are explored. The consequences of falling prey to moral hazard in the practice of radiology are discussed.

Key Words: Moral hazard, medical ethics, principal-agency problem, asymmetric information

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Today, physicians find themselves working in an increasingly complicated and at times difficult workplace environment. The interjection of reimbursement issues into the practice of medicine means that physicians have to act not only as caregivers but also as businessmen. This places them in a very delicate position, because physicians not only provide care but decide what care and how much of it to deliver. It's like leaving the fox to guard the henhouse.

MORAL HAZARD

Being both providers and decision makers leaves physicians open to what is known in business terms as moral hazard. Moral hazard is the risk that one party to a contract will change his or her behavior to the detriment of the other party once the contract has been put into force [1,2]. Generally, moral hazard arises whenever a form of risk is transferred for a price. The contract gives one party relief from risk or responsibility for a commodity in exchange for some cost, usually a specified sum of money. Classic examples are found the insurance industry, for example, fire insurance. Once a policy is issued, the policy holder may be less inclined to protect the insured premises against fire, because the company will now cover a loss.

It's essential to point out that moral hazard is not a consequence of a contract but rather the morals and ethics of the parties to the contract. It's an individual's moral code that determines if and to what extent moral hazard will occur. The asymmetry of risk or information simply provides the opportunity for one party in a contract to take advantage of the other.

Moral hazard is the foundation of the argument against unemployment insurance and state-provided welfare. Conservatives argue that providing these social safety nets—a form of social contract in which the government assumes some of the risk of maintaining a minimal standard of living—will encourage some people not to work at all or to have more children than they can afford [3]. The same is argued of US policy to provide loan guarantees to third-world countries or of federal deposit insurance [4,5]. The hazard of providing a safety net in the form of loan guarantees will be to encourage risky behavior, because another party is covering the loan. In another example, some have argued that the presence of a strong military, whose job it is to defend a nation, will increase the nation's sense of security and therefore its aggressiveness and the likelihood of war [6].

THE PROBLEM

Stockbrokers, who contract to handle clients' financial affairs, may "churn" their clients' accounts by virtue of the asymmetry of knowledge between brokers and cli-

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ents. In doing so, stockbrokers are abnegating contracted fiduciary responsibilities to their clients in favor of personal financial gain. Similarly, physicians contract with patients to provide care in return for money. By virtue of their superior knowledge of medicine, they're in a position to take advantage of patients for their own potential gain. So, like stockbrokers, physicians can churn their patients' accounts. They may not do it consciously, but human nature being what it is tends to bias behavior in favor of personal over patient welfare. This concept must not be disregarded. For example, a radiologist who says, "Good medicine is the enemy of radiology," may think that it's a joke. Actually, he or she is cynically advocating, albeit passively, the performance of examinations that may not benefit patients. In doing so, the personal interests of the radiologist take precedence over those of his or her patients, and simultaneously, the radiologist abnegates the duty to husband resources that society apportions to health care.

Specifically, this type of moral hazard is known as an agency problem [7]. Physicians are more than simple caregivers: they are their patients' agents. Patients contract with doctors for services that they are unable to provide for themselves. Similarly, when a plumber comes to fix a leaking pipe, he or she is acting as our agent, whom we trust to fix the leak in the most efficacious way possible. The same is true of physicians, only more so perhaps. Medicine is much more complex than plumbing, and unlike plumbing, most laypeople have little substantive understanding of biologic systems.

Other participants in the health care arena want to use physicians as their agents. For example, insurance companies want physicians to represent their interests when caring for patients and protect them from expensive therapies. Often, contracts that physicians sign with insurance companies to become preferred providers have clauses stipulating that the physicians will represent the insurers' interests in a fair and unbiased manner.

Hospitals, too, want physicians to represent their interests in patient care. These interests differ from those of insurance companies and in fact often oppose them, because hospitals derive virtually all of their revenue from some form of insurance. Hospitals want physicians to promote expensive or at least high-margin therapies and tests.

Despite the desire of insurance companies and hospitals to have physicians act as their agents, doctors can serve only one master well. That master is the patient, and the Hippocratic oath makes this fact abundantly clear. Whether the original oath—"I will follow that system of regimen which, according to my ability and judgement, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous"—or the more modern versions, as exemplified by the oath crafted by Louis Lasagna in 1964—"I will apply, for the benefit of the sick, all measures which are required, avoiding those twin traps of overtreatment and therapeutic nihilism"—all have language to this effect.

This oath, even referred to by the US Supreme Court in *Roe v. Wade* [8], explicitly makes the physician the patient's agent, and only the patient's agent. Patients expect physicians to represent their best interests toward maintaining their health. They expect to benefit from their physicians' expertise and receive care that is appropriate. *Appropriate* is, of course, a loaded word. It means care that meets Goldilocks's criteria: it is neither too much nor too little. Just as we expect a plumber to replace no more and no less than the necessary length of leaking pipe, we also expect our physicians to practice no more and no less "medicine" than we need.

Indeed, the complexity of some problems may make it nearly impossible to decide what is appropriate until all is said and done. Rarely, patients may seem hopelessly ill and yet recover as a result of some heroic measure that in hindsight was appropriate but prospectively seemed to be a fruitless waste. There are times when clinicians, either within the same specialty or across specialties, will disagree as to what is appropriate or even the diagnosis. Furthermore, in deciding what is appropriate care, we must consider the fact that physicians treat not only patients' diseases but patients themselves. Certainly, this type of complexity is why medical practice is an art as well as a science. Even so, the vast majority of patients' problems are not so confounding, and what is actually appropriate care is not obscure.

Sometimes, appropriate care may even mean providing treatment that patients find difficult or distasteful but is nonetheless in the best interest of their health. Admittedly, individuals may have different opinions as to what is indicated or what is too much or too little, but all can agree on the concept. Appropriateness certainly doesn't include being a convenience store for medical testing and therapy. In short, patients want their physicians to provide only the care that is indicated.

What is the meaning of *indicated*? According to the *American Heritage Dictionary* [9], to indicate is "to suggest or demonstrate the necessity, expedience, or advisability." Practically speaking, indication is determined in the context of the governing contract. In the case of a physician-patient contract, it means providing care that promotes a patient's health. Providing care that is detrimental or that only partially addresses a patient's health problems is beyond the contract and therefore not indicated. In practical terms, one might measure indication by whether or not an examination or a therapy is expected to affect patient management positively. A study whose result will not change what is done for a patient is simply not indicated. Just as investors don't want a stock-

broker to churn their accounts to reap higher commissions, patients don't want their physicians to perform unnecessary tests or provide ineffective therapies as a means of self-enrichment or hospital enrichment.

The problem, of course, is that in real life, physicians are rewarded for what they do, not for what they don't do. Physicians are only human. They respond to the inducements at hand, particularly if to do otherwise would mean expending considerable effort and social currency for no gain or perhaps even a loss. In general, people tend to choose the most rewarding and least resistive path.

As an example, let us consider an older male patient who is referred by an internist for a magnetic resonance scan for knee pain. Furthermore, suppose that the radiologist reviews the patient's plain x-rays and discovers that they show bone-on-bone osteoarthritis. What is going to happen? The presence of severe osteoarthritis means that the patient needs a new knee—total knee prosthesis—regardless of what internal derangements the magnetic resonance scan might show. The internal soft tissues of the knee joint are irrelevant. Still, more likely than not, the radiologist will go ahead and do the requested study, even though its outcome will not affect the management of the patient. Why?

The obvious answer is that the radiologist earns money for doing the study and doesn't for not doing it. This is true in the current system, but there are also a number of other reasons that drive the radiologist to do the test.

First, if the patient is an outpatient, he's likely made a special trip to have the test. The patient has been inconvenienced and perhaps has even taken time off from work to have the test.

Second, the fact that the patient's own internist requested the test means to the patient that there could be something seriously wrong, and the patient believes that this test is the one to evaluate it. The radiologist hasn't a relationship with the patient that would leave the patient feeling comfortable about a radiologist-initiated change in his management. Furthermore, a change may suggest to the patient that his clinician might be incompetent. Politically, this would be detrimental to all of the relationships involved: the relationships between the patient and the two physicians and the relationship between the internist and the radiologist.

Third, if the radiologist cancels the test, he or she may upset the referring physician, particularly one with a fragile ego. Upsetting the referring physician can cost the radiologist a great deal more than the income from a single examination. It may cost all of the future referrals from that physician.

Fourth, canceling the examination will require any number of annoying delays, including phone calls, waits on hold, pages to itinerant physicians, waits to pull the patient's chart, and a whole host of other delays. In the end, the internist may insist that the scan be done anyway. It's easier for the radiologist just to go ahead and do the test.

Fifth, in some institutions, ironically more often in academic practices but also in private practices, policy may not support questioning the indication for a study. Thus, the radiologist may be endangering his or her relationship with superiors by challenging studies.

Sixth, while the radiologist expends all this effort to investigate the indication for the examination, the scanner sits idle. It is a costly piece of equipment that is not generating revenue. If this happens with a high enough frequency, the radiologist may put his or her contract with the health care facility in jeopardy. After all, imaging centers and hospitals need revenue to survive.

Seventh, physicians worry constantly about litigation. As a result, they tend to practice what has been called "defensive medicine." For radiologists, this may mean doing examinations that they do not believe are indicated because to refuse would mean taking liability if they are wrong. In the case of internists, defensive medicine may mean doing extra laboratory and radiologic testing beyond what they believe is indicated solely to exclude a very unlikely possibility and so ensure that they are not sued. This may include requesting unnecessary radiologic examinations and is practicing medicine against the patient's interests and only for those of the physician. Clearly, this is an agency issue and an abrogation of the patient-physician contract.

Considering all the heartburn-inducing trouble radiologists anticipate having to go through to cancel examinations and thereby not earn their livings, it's no wonder that most radiologists will simply choose to do tests even though they are not indicated. Besides, one can always rationalize that there's no or minimal radiation from most tests and no real harm to patients. So why bother with trying to cancel a study?

It's not only radiologists who face this type of agency issue. Moral hazard issues permeate all of medicine and its specialties. Surgeons get paid to operate. Less expensive nonsurgical therapies do not bring equivalent rewards. The rate of cesarean sections has been shown to vary according to the economic status of the patient [10]. Internists want to keep their patients from leaving their care and going instead to other, "friendlier" physicians. So they may be inclined to selectively treat patients' medical problems. For example, they may not address the obesity that contributes to patients' heart disease, diabetes, and arthritis, tending instead to treat each problem alone. Physicians know that patients don't respond well to personally sensitive subjects and that patients are likely to change physicians rather than go to doctors who nag them to lose weight. Because physicians want to protect

their incomes, they may find it unwise to push unpalatable care.

The opportunity for some physicians to engage in ancillary business investments further tempts some into unethical behavior. Not only is it self-enriching to refer a patient to a laboratory or imaging center in which an ownership interest exists, the desire to keep the investment from losing money, or worse, going bankrupt, creates undue pressure to self-refer. Self-referral in itself is not an evil, but it rapidly becomes one when a physician's interest becomes preeminent over those of patients. Given human behavior and psychology, this is not a small issue.

Expedience may also cause agency issues. Many emergency departments have triage nurses who order initial imaging studies so that the studies have been completed before physicians see patients. One can argue for the necessity of this practice to keep a busy center efficient. However, it does not help a patient who has come to the same emergency center five times with a complaint of headaches and received four head computed tomographic scans and a magnetic resonance imaging scan of the brain, all of which were normal and all within a year's time. Excesses of this type could be prevented by a policy that mandates the review of patients' records before expending resources. Clearly, this is difficult to accomplish when other issues are pressing. Many other examples of moral hazard exist throughout medical care. These are but a few.

The institutionalization of a policy to do nonindicated or even marginally indicated diagnostic examinations that are not "harmful" to a patient has other larger implications. In an academic institution, this policy sends a clear message to physicians in training about the correct practice of medicine. It states overtly that it's all right, perhaps even good, to put political, personal, and institutional considerations ahead of patients' interests. In short, the codification of this type of policy institutionalizes moral hazard and condones action that serves institutions over patients. In fact, it's not only patients who suffer but their insurers and ultimately the entire population who must foot the bill for these nonindicated examinations.

The irony of this circumstance is that many radiology departments believe that they are doing the right thing when they adopt no-denial policies. In justification, they will argue that clinicians know their patients better than radiologists, and therefore, radiologists shouldn't question clinicians' requests. This logic is entirely specious. Radiologists are the imaging experts. They know the tests and their capabilities better than clinicians do, have been through extensive medical training, including medical school, and as physicians, they have an ethical obligation to their patients once tests have been requested. There is absolutely no reason why radiologists should not contribute their expertise to patient care, not only on the interpretive side but also on the indication side of their imaging specialty.

THE CURE

If people respond to incentives, it would seem that one logical step toward curing agency problems would be to change the incentives of the current system. This, of course, is easy to say but difficult to do. The easiest change to consider would be to take the piecework incentive out of medicine. If physicians were all salaried instead of remunerated by the case, certainly, there would be less push to do more than if physicians continue to be remunerated on a piecework basis. Salaried individuals earn the same amount of money regardless of the amount of work that they do, so incentives are perverse in the direction of doing less. This laziness factor can lead to an agency problem of the opposite type, one whereby patients receive too little care.

The solution might be to use some combination of salary and the piecework system so that there is a balance between greed on one hand and laziness on the other. The problem here is individual variation in motivation. Where the ideal balance between salary and casework remuneration resides in individuals will vary widely according to their personalities and stages of life. This fact makes determining the ideal split between the two forms of remuneration difficult.

Furthermore, using financial incentives to improve the performance of less desirable portions of a job can be particularly difficult with salaried employees compared with piecework employees. When work is remunerated on a piecework basis, prices can be fine-tuned either to ensure the completion of undesirable work on a timely basis or to reduce the demand for that work. True, salaried individuals can receive incentives to take on such tasks, but this type of adjustment is generally less precise in a salary system.

The introduction of managed care, particularly capitation, diagnosis-related groups (DRGs), and health maintenance organizations, into the medical marketplace has had interesting ramifications *vis-à-vis* moral hazard. Health maintenance organizations often include incentives for their providers to control costs by offering bonuses to those who care for their patients least expensively. Capitation and DRGs are tools that payers use to control costs by transferring part or all of the financial risk of care to providers. By negotiating a fixed annual fee for each covered patient or diagnostic grouping for each admission, a payer controls its costs, and providers assume any unforeseen costs. The problem with each of these cost controls is that they turn the moral hazard issue

upside down but by no means eliminate it. Essentially, these controls take providers from a piecework model of practice, whereby the more care they provide, the more money they make, to a situation analogous to that of salaried employees. As discussed above, the moral hazard of a salary contract system is that employees will do as little work as possible, because they will earn the same amount regardless. This, of course, places patients at risk for receiving too little care. Once physicians' contracts are in place, assuming no gross negligence, their behavior may be influenced, consciously or otherwise, to decrease the amount of care delivered to maximize their own personal gain.

This is by no means necessarily an undesirable outcome. One might argue that as long as patients' health is maintained, the personal profit motive serves to reduce the overall cost of medical care to society as a whole. That health will be maintained is "ensured" by the fact that if a physician in a capitated or DRG system doesn't provide adequate care, patients will become sicker and hence require more care and so reduce the physician's profit. In this type of a system, physicians are more likely to concentrate on treating a disease and less likely to consider an entire patient. For example, a physician is much less likely in these circumstances to spend dollars on care that provides patient reassurance but little direct physical benefit. On the other hand, the subtle neglect of some diseases (e.g., hypertension or diabetes) may lead to the deterioration of health that isn't detected during the capitation or DRG contract period. This is a clear peril of a system that gives physicians incentives to provide less rather than more care.

Regardless, no matter what remuneration system is put into place, nonfinancial issues will also drive the way work is performed. Workplace conditions—physical, cultural, and political—affect the ease with which tasks are completed. In some instances, no matter how great the financial incentive, some individuals may not find it enough to motivate them to complete tasks they find odious. An individual who feels that a task is too much effort relative to the amount of revenue it generates is likely to assign it a low priority. In medicine, of course, work is often scheduled through appointments and cannot be put off indefinitely. Even so, many excuses can be found to cut corners or to avoid scheduling "undesirable" work altogether.

For example, past medical record information needs to be easily and readily accessible to health care workers. If records are difficult to obtain, physicians may not afford the time required to obtain the information and instead proceed without the benefit of the old records and so duplicate prior examinations. The implication of this point is that the impact of systems such as the one recently devised by the Health Insurance Portability and Accountability Act need to be carefully evaluated [11]. Although the protection of patients' rights is of the utmost importance, creating an environment in which patients receive optimal care without hindering information flow is also essential.

Changing a workplace's cultural substrate can improve the chances that work will be viewed as a challenge instead of a burden. Of course, effecting this change is a difficult issue, and volumes have been written about creating the appropriate workplace culture. This complicated subject is beyond the scope of the current manuscript. Suffice it to say that the more political, bureaucratic, and top-down an organization, the more likely it is that the workplace culture will be a difficult one in which to motivate workers, to innovate, and to move work forward.

When individuals feel threatened, they are likely to act to mitigate the threat. So, physicians who worry that patients are apt to sue for poor outcomes are likely to try to protect themselves instead of acting purely as patients' advocates. They will practice defensive medicine, whereby the care tendered is not for the benefit of their patients but instead for protection from their patients. This means unnecessary health risks from exposure to radiation and invasive procedures. Remedying the fear of litigation is complex and clearly requires an integrated approach. Given the high rate of malpractice insurance costs, most obvious is some form of protection from frivolous suits and the imposition of limits on awards. On the other hand, it's also important to put the litigation risk in perspective. The threat of malpractice is a stick that helps ensure that physicians do not give in to slothfulness in the care of their patients, albeit one that should be applied more responsibly.

Another area in which medicine could address moral hazard issues is the selection and education process for new physicians. The institutionalization of policies in teaching institutions that condone moral hazard sends a powerful message about the appropriate way to practice medicine. In the radiology example cited above, teaching institutions that overtly or tacitly set policies of doing all tests that "don't harm the patient" deemphasize physicians' responsibility to ensure that requested examinations are in patients' best interests. Other forms of hazard, such as a busy emergency department's emphasis on throughput over the proper evaluation of patients' problems, send equally potent messages. These messages are not lost on physicians in training. If their mentors do it, then the trainees can also, and they will when they go into practice. In theory, private practice, because it has no academic mission, has a greater tendency to run as a revenue-generating enterprise than academic practice. If medical training facilities do not uphold the highest ethical standards, it's easy to understand how ethical stan-

dards will fall in general as more and more individuals graduate from training and go out into the community to practice.

The criteria by which students are accepted to medical school and the way these students are educated also clearly affect the outlook and attitudes of the mature physicians they're destined to become. Premedical programs promote science. Although some undergraduate premedical programs may give a nod to the humanities, virtually no program emphasizes courses in ethics, philosophy, social sciences, or the other humanities. Of course, premedical programs are designed in response to the criteria set by medical schools, which seek students who primarily excel in science.

Few medical schools incorporate courses in the humanities fully into their curricula. Few seek out students with significant training in the humanities. Those that do certainly don't emphasize this aspect of education. If they offer courses in ethics and other related topics, these courses are most likely ungraded. When the science courses are graded and the ethics courses aren't, students immediately understand where to put the emphasis in their studies.

Residency programs focus exclusively on the technical aspects of patient care. Skill training is emphasized to the virtual exclusion of all else. During residency, humanitarian concerns are often expressed only in the question "If the patient were your mother, what would you want done for her?" This unsophisticated approach to humanitarian issues ignores a large portion of the ethical obligations of a physician. It ignores issues regarding what the resident's mother, older and wiser than the young resident, might want done for herself, what society wants for the patient, and what society can afford for the patient. These are difficult issues worthy of separate discussion.

In conclusion, despite the current atmosphere of medical practice, with its emphasis on medicine as a business and the pressures of litigation, physicians need to recall their role as healers. Medicine is a learned profession, one that requires high ethical standards and a keen awareness of the moral hazard trap. The patient's best interests are paramount, and the acceptance of a patient means subjugating one's own personal needs regardless of a desire to increase revenue or protect against litigation. Clearly, human motivators run contrary to these goals. We cannot expect saintly behavior from anyone, but we can discourage unethical behaviors through the realignment of the system of remuneration, changing medical culture through education and system design, and reducing the sense of legal embattlement so prevalent in medicine today. Good medicine is not the enemy of radiology. Moral hazard is the enemy of medicine and radiology both.

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