

Defensive Medicine: Definition and Causes 2

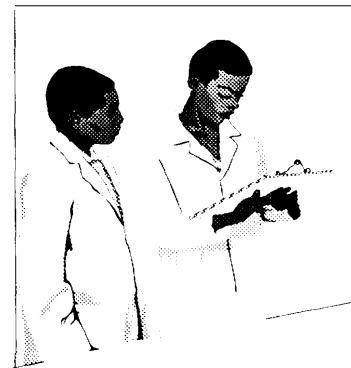
Despite widespread use of the term in the current health policy debate, there is limited understanding of—let alone consensus on—the true nature of defensive medicine. This chapter explores the concept of defensive medicine. First, it sets forth the Office of Technology Assessment (OTA's) definition and **compares** it with alternative approaches to defining defensive medicine. Second, it explores the sources of defensive medicine: why physicians want to avoid lawsuits; what types of signals the malpractice system sends to physicians; the role of institutional risk management and quality assurance activities in defensive medicine; and finally, the role of graduate medical education in promoting defensive medicine.

DEFINING DEFENSIVE MEDICINE

OTA'S definition of defensive medicine, adapted from several sources (71,252,260), is as follows:

Defensive medicine occurs when doctors order tests, procedures, or visits, or avoid high-risk patients or procedures, primarily (but not necessarily solely) to reduce their exposure to malpractice liability. When physicians do extra tests or procedures primarily to reduce malpractice liability, they are practicing positive defensive medicine. When they avoid certain patients or procedures, they are practicing negative defensive medicine.¹

¹ Physicians may stop performing certain tests or procedures if by doing so they can avoid the need for costly or hard-to-find malpractice insurance to cover these activities. The most frequently cited example of negative defensive medicine is decisions by family practitioners and even some obstetrician-gynecologists to stop providing obstetric services. These decisions may result when malpractice insurance premiums vary depending on whether the physician delivers babies.



Note that this definition includes only those practice changes affecting the rate of use of medical services. Changes in practice style, such as spending more time with patients, giving more attention to careful documentation of the medical record, or making greater efforts to communicate or obtain informed consent, are not defensive medical practices under OTA's definition. Documenting the extent of these changes in practice style would be very difficult, and their positive implications for the quality of care are less equivocal than are the implications of doing more or fewer procedures.

OTA's definition raises three important issues of interpretation. Each is discussed below.

Conscious vs. Unconscious Defensive Medicine

The first question is whether the desire to limit malpractice liability must be conscious in order for a practice to be labeled defensive medicine. OTA's definition permits a practice to be defined as defensive even if the physician is not consciously motivated by a concern about liability.

How can physicians practice defensively without knowing that they do? Over time, many procedures originally performed out of conscious concern about liability may become so ingrained in customary practice that physicians are no longer aware of the original motivation for doing them and come to believe that such practices are medically indicated. Medical training may incorporate such customs without explicitly communicating to interns and residents the medicolegal considerations behind them. Thus, although physicians may practice conscious defensive medicine in a limited set of clinical situations, additional defensive practices may result from the cumulative response of the medical profession to signals from the malpractice system.

Primary vs. Sole Motivation

Under OTA's definition, defensive medicine is assumed to exist even when it acts together with other motivations, such as belief in a procedure's effectiveness, desire to reduce medical uncertainty, or financial incentives. A more stringent definition of positive defensive medicine would limit it to the ordering (or avoidance) of tests and procedures *solely* to protect the physician against future malpractice suits.² Under this definition, the physician would be engaging in defensive medicine only when he or she believed that a test or procedure offers no chance of helping the patient.

OTA rejected this stringent definition of defensive medicine for two reasons: first, such behavior, when it is conscious, appears to violate physicians' ethical principles; and second, medical practice involves implicit judgments about whether the benefits of tests or procedures outweigh their costs and risks to the patient. The fear of being sued may cause physicians to increase their tolerance for these costs and risks. So, while the physician may be driven by malpractice concerns to "rule out" a highly unlikely diagnosis, he or she can also believe that the action will offer some benefit to the patient. The frequency of these instances probably vastly outweighs the frequency of defensive medical practices performed with certainty that the patient will *not* benefit.

Defensive Medicine: Good, Bad, or Both?

OTA's definition does not specify whether the defensive action is good or bad for the patient; it requires only that the physician's primary motivation to act is the desire to reduce the risk of liability. Thus, some defensive medical practices may be medically justified and appropriate while others are medically inappropriate.

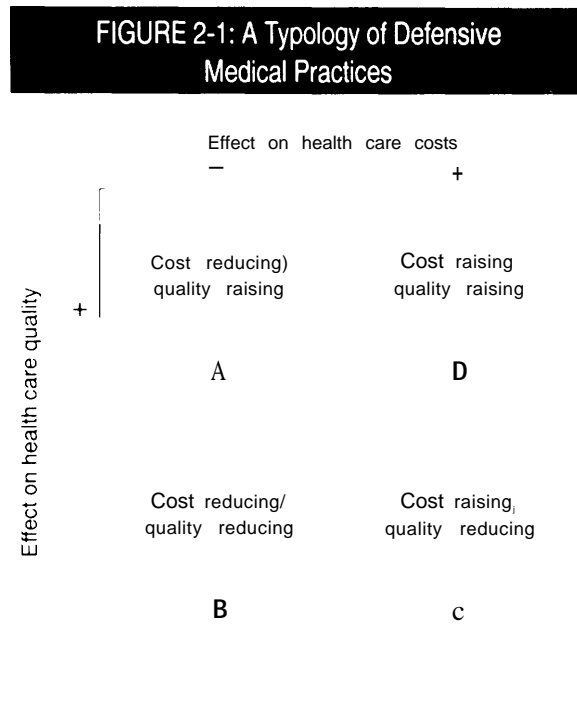
²For example, Dr. James Todd, executive vice president of the American Medical Association, recently defined defensive medicine as "objective measure taken to document clinical judgment in case there is a lawsuit..." (226). Lewin-VHI, Inc., adopted a similar definition in a recent study funded by MMI, Inc. (125).

This definition conflicts with other definitions of defensive medicine. The Secretary's Commission on Medical Malpractice, for example, defined defensive medicine to include only those medical practices performed primarily to prevent or defend against the threat of liability *that are not medically justified* (243). This definition is consistent with the widely accepted pejorative view of doctors ordering unnecessary and costly procedures because of the malpractice system.

OTA rejected this definition for two reasons. First, measuring the extent of defensive medicine under such a definition would require judgments about the appropriateness of all medical practices—a task far beyond the scope of this study and infeasible given the current state of medical knowledge. Second, malpractice reforms that reduce physicians' propensity to engage in inappropriate defensive medicine may also reduce their use of appropriate practices. Analysis of the impact of malpractice reforms on defensive medicine should include explicit consideration of their impact on both kinds of behavior.

One explicit goal of the medical malpractice system is to deter doctors and other health care providers from putting patients at excessive risk of bad outcomes. To the extent that it exists, defensive medicine that improves outcomes contributes to the deterrence goal. In the process of improving outcomes, "good" defensive medicine may raise or lower health care costs. But the malpractice system may also encourage physicians to order risky tests or procedures that both raise health care costs and on balance do more harm than good for patients. These practices are clearly both inappropriate and wasteful of health care dollars.

Figure 2-1 gives a simple schematic of four kinds of defensive medicine, classified according to their impact on health care outcomes and costs. Box A includes practice changes that are unquestionably good for the health care system and its pa-



SOURCE: Office of Technology Assessment, 1994.

tients, because patients do better and health care costs are reduced. Box C includes practices that are unquestionably bad. Boxes B and D, however, represent situations involving tradeoffs between health care quality and health care costs. All defensive practices in boxes A and D would contribute to the "deterrent" effect of the malpractice system, because patients do better when they have access to them. Which practices in box D are medically appropriate, however, is a matter of judgment. Is an expensive test justified for a patient who has one chance in 15,000 of having the disease in question? What if the chance of a positive test is one in 100,000? What if the disease in question is not very serious? Judgments about questions such as these determine the dividing line between appropriate and inappropriate medical procedures.

OTA has no evidence on the frequency of these four different kinds of defensive medicine.³ Not only is it difficult to measure the frequency of defensive medicine overall, but when instances of defensive medicine are found it is also difficult to categorize them according to their ultimate impact on costs and health outcomes. The following two examples illustrate this point.

Example #1: Referrals for Breast Biopsy After Screening Mammography

The Physicians' Insurance Association of America recently reported that delayed diagnosis of breast malignancy was the second most common cause of malpractice claims and accounted for the greatest percentage of money awarded to plaintiffs (184). It would not be surprising, then, if it were discovered that radiologists responsible for interpreting screening mammograms practice defensively by referring for biopsy any patient whose mammogram contained a suspicious finding, no matter how equivocal.

A study by Meyer and colleagues at Brigham and Women's Hospital, a large teaching hospital in Boston, suggests that community-based radiologists are more aggressive in their recommendations for followup of suspicious mammograms than are hospital radiologists (160). Table 2-1 contrasts the positive biopsy rate for mammograms interpreted by staff radiologists at the teaching hospital with that of mammograms referred for biopsy by radiologists practicing at other institutions or in the community. Whereas 26.1 percent of the biopsies performed on cases originating at the hospital were positive, only 16.7 percent of biopsies for cases originating in other settings were positive.⁴

TABLE 2-1: Positive Biopsy Results in Cases Referred from Screening Mammograms, 1987-88

	Number of biopsies	Percent malignant ^a
Mammograms interpreted at Brigham and Women's Hospital	280	26.1%
Mammograms Interpreted at other hospitals and offices ^b	981	16.7C

^aLobular carcinomas considered benign

^bThere were 73 separate hospitals and offices

^cStatistical significance of difference in percent malignant = $p < .05$

SOURCE J E Meyer, T Eberlein P Stomper, and M Sonnenfeld, "Biopsy of Occult Breast Lesions Analysis of 1261 Abnormalities," *Journal of the American Medical Association* 263, 17) 2341-2343, 1990

Meyer and colleagues did not study whether the difference was due to defensive medicine on the part of the community radiologists versus other factors such as skill or patient differences. Even if it were possible to conclude that the entire difference is due to defensive medicine, however, it would still be impossible to classify it according to the schematic of figure 2-1. On the one hand, the community radiologists followed a diagnostic process that presumably would find more cancers, most likely at an earlier and more easily treatable stage. On the other hand, breast biopsy is painful and scarring, which not only distresses patients but also makes future diagnosis of malignancy in a patient with a negative biopsy more difficult (27).

Some experts advocate mammographic followup in 6 to 12 months in cases where the first mammogram is interpreted as most likely benign (28). However, in a retrospective study of 400 breast biopsies from screening mammograms, researchers found that eliminating 126 of the "least suspicious" findings from the group referred for biopsy would have missed five cancers, four of

³ At present, there are almost no studies of the extent to which the malpractice system, as it is presently configured, deters physicians from providing care of low quality. OTA is aware of (rely one study addressing this issue in a hospital inpatient population. Researchers at Harvard University recently analyzed the relationship between the number of malpractice claims per negligent injury and the rate of negligent injuries in New York State hospitals in 1984. They failed to demonstrate a significant relationship between a hospital's malpractice claim activity and its rate of negligent injury (254).

⁴ The latter percentage is actually inflated, because some referrals from outside the hospital were canceled after consultation with a radiologist at the hospital before scheduling the surgical biopsy.

which were noninvasive at the time of the biopsy (87). If these results are representative, then for every 1,000 biopsies avoided by not referring less suspicious mammogram results, about eight already-invasive cancers would be missed, and a small but unknown proportion of the 40 noninvasive cancers missed would progress to an invasive stage in the followup period.

Whether the benefits from detection of more early breast cancers outweigh the pain and risks associated with negative biopsies is a value judgment, so it is not clear whether defensive medicine, if it is being practiced by community radiologists in Massachusetts, improves or worsens health outcomes. If on balance it does improve health outcomes, it is likely to do so at a high dollar cost. Whether the benefits are worth this high cost is also a value judgment.

Example # 2: Diagnostic X-Ray Examinations in the Hospital Emergency Department

A 1980 study looked at x-ray tests ordered for patients at Stanford University Medical Center’s Emergency Department who had a history of trauma during the previous seven days (63). Just prior to x-ray, a member of the research team (either an intern or resident) placed each patient in one of the following four categories using a set of detailed criteria developed for the study:

- positive for fracture
- highly suspicious of fracture
- suspicious of fracture
- medicolegal.⁵

Of the 2,179 patients for whom diagnostic x-rays were ordered, 1,009 (46 percent) were labeled *medicolegal* under the categorization scheme. Of these medicolegal procedures, 7.5 percent were positive for fracture, compared with 20 percent of all procedures. Table 2-2 shows the percent of procedures in each region of the body that were classified as medicolegal. In only one of the 1,009 x-ray

procedures classified as medicolegal—an undisplaced navicular (hand) fracture—did treatment change as a result of the x-ray.

The study did not explore the extent to which the emergency room physicians who ordered these x-rays were practicing defensive medicine. Other motivations may have entered into ordering procedures. The study authors suggested that the emergency room physicians, most of whom were interns and residents, may not have had the experience or appropriate training to discriminate adequately among cases. The high percentage of medicolegal spine and skull x-rays (see table 2-2) suggests that physicians tend to be aggressive in their test ordering when the medical consequences of being wrong are very serious.

TABLE 2-2: Frequency of Medicolegal Diagnostic X-Rays in a Series of Emergency Room Procedures¹

Region	Percent of all procedures	Percent classified medicolegal
Cervical spine	1 % ⁴⁰	7 8 %
Pelvis	10	71
Skull	19	70
Sacrum	0 5	69
Lumbar spine	4	62
Other	80	39

¹Total number of procedures was 2,359. Some patients underwent more than one procedure.

SOURCE: M. Eilastam, E. Rose, and H. Jones, "Utilization of Diagnostic Radiologic Examinations," *Journal of Trauma* 20(1): 61-66, 1980.

■ Probabilities, Medical Consequences, and Defensive Medicine

When a physician is very certain about a diagnosis—that is, when the probability that the patient has a specific disease is either very high or very low—then his or her desire for confirmatory tests is likely to be lower than when the physician is very uncertain about the diagnosis. Thus, the frequency of test ordering for different patients

⁵“Medicolegal” was a name given after the study was completed to all cases not meeting the clinical criteria for fracture in the other three categories.

should grow as the probability of a disease increases from zero and then declines again as it approaches 100 percent.

When the medical consequences of being wrong are severe, as in the case of a life-threatening or debilitating disease for which early diagnosis would mean better and more effective treatment, then the desire for certainty, and the tests that can increase it, undoubtedly grows. Thus, the frequency of test ordering at any given probability of disease should be higher in patients suspected of having diseases that are more serious.

Roughly 25 to 30 percent of all malpractice cases allege missed or delayed diagnosis (67,235). Thus, when the medical consequences of being wrong are severe, so too are the consequences for malpractice.⁶ Defensive medicine should be more frequent in clinical situations with the following characteristics:

- when the disease or condition to be detected or prevented is life-threatening or disabling,
- when timely detection of the disease or condition changes therapy,
- when the change in therapy can be expected to make a real difference to the patient's ultimate state of health, and
- when the diagnostic test or treatment alternative is readily available and low-risk.

In meetings with panels of experts in three specialties—cardiology, surgery, and obstetrics/gynecology—OTA asked panelists to identify clinical situations in which the threat of a malpractice suit would play a significant role in their own or their colleagues' clinical decisions. Uniformly, the situations chosen by panelists were similar to the conditions outlined above—i.e., the patient presented with a probable minor condition, but concern about malpractice liability might lead many physicians to order an expensive diagnostic test, or even admit the patient to the hospital, to

rule out a remote but potentially very serious or fatal condition.

When the same experts were asked to alter the clinical scenarios to remove defensive medicine as a motive, they virtually always added signs and symptoms that increased the probability that the patient had a serious disease.

Figure 2-2 illustrates the general relationship between the probability that the patient has the disease(s) or condition(s) being tested for and the probability that a physician will order a test. As the severity of the suspected disease or condition increases, the desire to test increases at any given probability of disease.

In certain cases, concern about liability might decrease physicians' tolerance for uncertainty and cause them to order tests more frequently when the probability of disease is very low or very high (see figure 2-2). When the probability of disease is very low, the physician may want to "rule out" its possibility. When the probability of disease is very high, the physician may be concerned about documentation of the condition for protection against potential claims of misdiagnosis. At more intermediate probabilities, the effect of malpractice liability on physicians' test ordering might not be so great, since uncertainty is already high. Again, one might expect defensive medicine to be most pronounced when the probability of a positive test is very low but the consequences of not finding the disease are catastrophic.

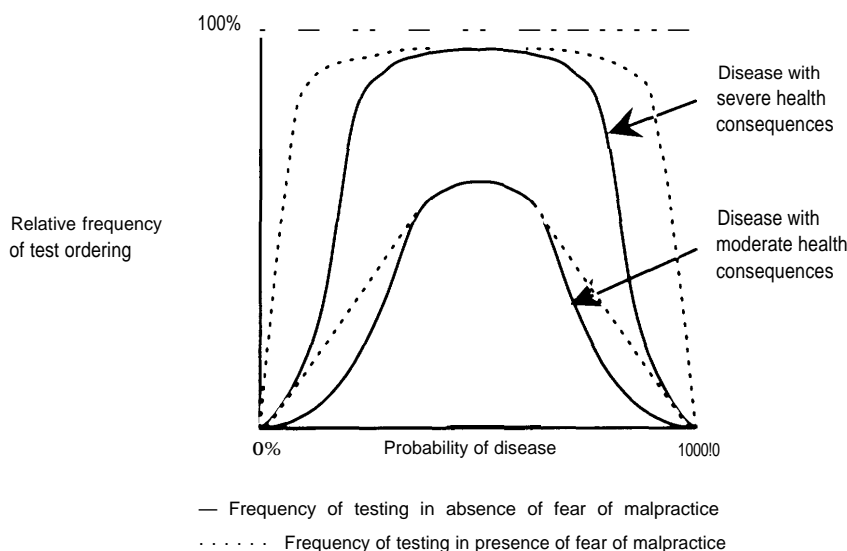
THE SOURCES OF DEFENSIVE MEDICINE

■ The Consequences of Being Sued

In conversations with OTA, physicians expressed emotions ranging from annoyance to animosity toward the legal system, often questioning its ability to fairly judge medical practice. Physician sur-

⁶Not all of these missed diagnoses result from omissions in testing. Missed diagnoses may occur as a result of failure to complete a physical examination, incorrect interpretation of a diagnostic test, or delay in following up on a positive finding. Omissions in testing probably represent a minority of all cases of missed diagnosis (26, 119).

FIGURE 2-2: Hypothetical Impact of Uncertainty and Severity of Disease on Frequency of Test Ordering



SOURCE Office of Technology Assessment 1994

veys reveal that an overwhelming majority believe that most malpractice claims are unwarranted and that the present system for resolving claims is unfair (38, 180). Although some of these beliefs may not be well-founded,⁷ they are real and pervasive in the physician community. Evidence has also shown that, across all specialties, physicians tend to substantially overestimate their risk of being sued (123) (see table 2-3).

Financial Consequences

For the vast majority of physicians, a malpractice suit does not have a major impact on personal finances or professional status, mainly because most physicians have adequate malpractice insur-

ance. Some physicians report that lawsuits damage their reputation or reduce the demand for their services, but most classify such losses as minor, and physicians who have already been sued are less likely than those who have not to report these effects (180).

Physicians do incur some personal financial costs when they are named in a malpractice suit. These costs are primarily in the form of lost days of practice, although sometimes physicians retain personal counsel. (Physicians are usually represented by their insurer's counsel.)

Survey-based estimates of physician time and income lost in defending against malpractice claims range from 2.7 to 5 days of practice and

⁷The best available empirical evidence indicates that 60 percent of malpractice claims are nonmeritorious, but most of these suits are eliminated early in the process (68,222,235). In addition, retrospective studies of closed claims suggest that payment of malpractice claims, whether through settlement or trial, is not haphazard—the vast majority of indefensible claims are paid, and the substantial majority of defensible claims are dropped (40,68,222). (Defensibility of a claim was judged either by an insurer, physician panel, or hospital.) On the other hand, the studies also document that mistakes are sometimes made both in finding physicians negligent who met the standard of care and in failing to compensate victims of medical negligence.

TABLE 2-3: Actual and Perceived Risk of Being Sued Among New York State Physicians

Physician characteristic	Perceived risk: percent of physicians sued per year ^a	Actual risk: percent of physicians sued in 1986	Ratio of perceived risk to actual risk
Specialty group			
Low-risk internal medicine ^b	12.1%	3870	3.2
Medium-risk general surgery ^c	234	109	2.1
High-risk obstetrics, orthopedics, neurosurgery	343	208	1.6
Suit status			
Never sued	149		
Sued at least once	238		
Overall	195	6.6	3.0

^aThe question asked of physicians in this 1989 survey was "In your opinion, for every 100 physicians in your specialty in New York State, how many do you think will be sued at least once this year?"

^bIncludes associated specialties such as family practice, gastroenterology, and neurology

^cIncludes associated specialties such as ophthalmology, plastic surgery, and urology

SOURCE Adapted from A G Lawthers A R Localio N M Laird et al, "Physicians' Perceptions of the Risk of Being Sued," *Journal of Health Politics, Policy and Law* 17(3) 462-482, fall 1992

from \$2,400 to \$5,600 in lost income per claim (123,194). In a 1989 survey of New York physicians, six percent of those sued reported that they had retained their own counsel and incurred between \$1,000 and \$5,000 in out-of-pocket expenses; three percent of sued physicians reported paying out-of-pocket settlement costs, with one percent reporting expenses greater than \$25,000 (123).

Physicians' anxiety about being sued may result from misperceptions about the potential financial consequences of a lawsuit. Numerous examples exist of multimillion dollar malpractice verdicts—verdicts that far exceed most physicians' insurance limit.⁸ But physicians almost never pay any damages above their policy limits because such awards are usually either covered by several defendants or reduced in post-trial negotiation among the parties (45). Individuals' perceptions of risk, however, do not always agree with objective measures of risk.

Recent federal and state laws requiring reporting of malpractice claims to central repositories may change the perceived importance of even a

single lawsuit in the minds of physicians. Since 1990, federal law has required all payments for malpractice made by or on behalf of a physician to be reported to a new National Practitioner Data Bank (NPDB). The NPDB maintains a short narrative on the incident, including any response filed by the physician (246). This information must be reviewed by hospitals when hiring new staff and every 2 years for current staff (45 C.F.R. Sec. 60.10). It can also be accessed by a limited number of other potential employers.

Some states have their own malpractice reporting requirements. In California, for example, a report to the medical licensing board is required whenever a payment of \$30,000 or more is made on behalf of a physician (Cal. Bus. & Prof. Code Secs. 801,802,803 (1989)).

The purpose of federal and state reporting systems is to improve monitoring of physician quality and conduct. In California, for example, reports of malpractice awards are reviewed by the licensing board to determine if disciplinary action is warranted (153,224). The overwhelming majority of claims are reviewed by contract physi-

⁸Most physicians carry policies of between \$1 million to \$2 million per occurrence and \$3 million to \$6 million per year (211).

cians and closed. Only those with evidence of gross negligence or incompetence are referred to regional offices for further action (224). Disciplinary actions in these few cases are almost always relatively minor; for example, being called in for a conference with a regional medical consultant. In rare cases, the Board may issue a restraining order or suspend a physician medical license (152).

None of the federal or state databanks current] y in place are open to the general public. However, an ongoing debate over whether to allow" public access to the Federal NPDB has probably increased physicians' anxiety about being sued (165).

The financial burden of malpractice premiums may be substantial for certain physicians in high-risk specialties or living in certain geographic areas. Malpractice insurance premiums vary by specialty and geographic area and can be very high in some localities. In 1987, obstetricians/ gynecologists (O B/GYNs) in Dade and Broward Counties, Florida, paid \$165,300 per year for standard coverage, compared with \$69,300 for OB/GYNS outside of those counties, and \$19,400 for family practitioners in Dade and Broward Counties (176).

Physicians' reactions to premium costs may sometimes be exacerbated by the fact that premiums are generally not volume-sensitive; OB/GYNs with coverage for high-risk deliveries pay the same premium regardless of how many deliveries they perform (2 100).⁹

While malpractice insurance rates are generally insensitive to personal malpractice history (21 0), the physician malpractice claim history can lead to denial or termination of coverage (206,207). In addition, a very small percentage of physicians may incur some kind of financial or professional sanction from their malpractice insurers if they have been named in negligence suits (207).

Psychological Consequences

Although the financial and professional costs of malpractice liability are real, the primary impact on physicians may be psychological. Physicians report that a malpractice claim causes short-term losses of self-esteem, and in two physician surveys, between 20 and 40 percent reported symptoms of clinical depression, anger, fatigue, or irritability (37,38).¹⁰

In another survey, 50 percent of physicians felt there would be a short-term decrease in self-esteem, and about one-third felt a suit could lead to long-term behavioral or personality changes, or physical illness. However, physicians who had already been sued reported these adverse effects at a rate about half of that for non-sued physicians, suggesting a "worried well" effect among physicians who have not been sued (180).

The anxiety caused by a lawsuit may continue for a long time. The average time between filing of a claim and its resolution is approximately 33 months, although it may take longer than 48 months (186). Moreover, a claim is often not filed until 20 months after the incident (186), leaving the physician much time to speculate as to whether a particular patient will bring a suit after an adverse outcome.

■ Signals from the Malpractice System to Physicians

A central goal of the tort system is to deter negligent behavior and hence improve the quality of medical care (253). At least two conditions must be met for the tort system to effectively deter poor quality care: first, the malpractice system must provide physicians with information as to what care is acceptable; second, physicians must be able to improve the quality of care they offer. The malpractice system, however, may not always

⁹ A few insurers offer lower premiums for physicians who work part-time or who work in academic settings (210).

¹⁰ The low response rate in both surveys (approximately 32 percent), and the prompting of physicians with a list of symptoms, raises the possibility of response bias.

send a clear signal to physicians about the standard of care the legal system demands (221).

Physicians' Interpretation of *the Legal Standard of Care*

Physicians often express frustration with the malpractice system and, in particular, with the legal standard of care.¹¹ In conversations with OTA, many physicians claimed that the legal standard of care does not reflect medical practice but is instead a legal construct divorced from the practice of medicine. Some of this frustration may stem from the fact that it is difficult for physicians to predict from previous cases the standard of care expected in the future. The legal standard of care is developed anew in each case, which is not surprising, since each patient has unique medical and other characteristics. In addition, the practice of medicine changes rapidly. This *de novo* approach to each case, however, may appear to physicians as unpredictable, despite the fact that the legal standard of care is always based on expert testimony about the prevailing standard in the profession.

Physicians also express concern about the quality of expert witnesses who establish the standard of care. An expert witness is required to have knowledge and skill above that of a lay person, but there is generally no requirement that an expert have education, training, and experience similar to that of the defendant (185).

According to the American Medical Association (AMA), experts have been permitted to testify when they do not have specific experience in the relevant area of practice (9). In some cases, the expert had not yet entered the profession at the time of the incident (9). Although a witness's qualifications may be challenged to prevent admission of testimony before the jury, once the testimony is admitted, the jury decides whether the testimony is credible.

The courts recognize that there is variation in medical practice, and a physician will not be held liable for following a practice if a "respectable minority" of physicians also follows the practice (134). But the jury must resolve any disagreements among experts on whether a physician should have made a particular diagnosis or performed a certain procedure. Physicians believe that lay juries are poorly equipped to resolve complicated clinical judgment issues (9).

If physicians believe that the legal system is unpredictable and incapable of accurately judging the quality of medical care (a conclusion not fully supported by recent empirical research—see footnote 7), then physicians are not receiving a clear signal about the standard of care demanded by the legal system. Consequently, physicians may conclude that the only way to avoid a suit is to do everything possible to avoid an adverse outcome, no matter how unlikely the bad outcome is or how costly the intervention.

A key area of concern is the potential liability for missed or delayed diagnosis. Suits alleging missed or delayed diagnosis appear to be increasing in severity. Data obtained from St. Paul's Fire and Marine Insurance Company showed that although "failure-to-diagnose" claims did not increase as a percent of total claims between 1980 and 1993, there was a statistically significant increase in the amount paid for these claims. In 1984, payments for failure-to-diagnose claims accounted for 25 percent of all payouts, compared with 34 percent in 1993 (228).

The increasing relative importance of failure-to-diagnose claims may result from a combination of better diagnostic techniques and improved outcomes when serious medical conditions are detected earlier. Both of these technological trends could make the consequences of not testing more serious. As technology changes, the legal standard

¹¹ The legal standard of care is the standard of acceptable medical practice as determined by the courts. The physician's conduct is judged against the prevailing standard of medical practice in the medical profession. The courts require physicians to practice medicine that is "customary and usual in the profession (111)." This standard is often referred to as the customary standard of care.

of care evolves, and physicians may feel especially vulnerable if they are not aggressive in diagnosis.

Changing Legal Doctrines

Changes in legal doctrines that alter the boundary between negligence and non-negligence may also confuse physicians. Recent changes in the legal doctrine called “loss of chance” in some states have put physicians at greater risk of being held negligent for not providing a diagnosis or treatment even when the chance of recovery from the condition are low.

In cases involving the “loss-of-chance” doctrine, the plaintiff usually has a serious or fatal condition but, if properly treated, has a chance of longer survival or cure. A patient (or the patient’s estate) can sue for malpractice, claiming that a physician’s negligent act, rather than the underlying disease, was the proximate cause of the plaintiff death or increased suffering.

The questions of whether the physician caused the injury and whether the underlying disease was responsible are decided by the jury. However, the judge does not allow the jury to consider questions of causality and negligence unless there is sufficient evidence that the physician’s action could be the proximate cause of the patient injury or death.

In general, to have sufficient evidence, the plaintiff must prove that it is more likely than not that, in the absence of the physician negligence, he or she would have survived or had a better outcome (96, 110, 178). To meet this standard, the courts have traditionally required that the plaintiff chance of survival with proper diagnosis or treatment would have been better than 50 percent (96, 110).

A minority of courts have abandoned the strict “51 percent” rule and instead allows the jury to determine whether a physician was negligent when the physician’s conduct is determined to be a “substantial factor” in causing the plaintiff’s harm (178).¹² The physician may be held liable when his or her negligence eliminated a 35 or 40 percent chance of survival or recovery (96).

In one often-cited case, the jury was allowed to consider whether a health maintenance organization (HMO) could be held liable for the patient’s death from lung cancer when his physicians’ negligence in diagnosing the cancer reduced the patient chance of survival from 39 to 25 percent.¹³ The court went on to say, however, that the defendant was not liable for full damages resulting from the plaintiff’s death, but only for those damages directly related to the delay in diagnosis caused by the physician negligence.¹⁴ A number of courts that allow recovery when the chance of survival is less than 50 percent limit the damages according] y (96, 110, 151).

Physicians may find these cases troubling because the courts are willing to hold the physician liable when his or her conduct diminishes the patient’s chances for survival by only a small percentage. Physicians may feel they are being unfairly held accountable for an inevitable injury or death, given the patient underlying medical condition. As one court noted, when dealing with causation, “it can never be known with certainty whether a different course of treatment would have avoided the adverse consequences.”¹⁵ Finally, predicting survival rates is not an exact science, which leaves room for conflicting expert testimony.

If sufficient numbers of physicians respond to missed diagnosis cases by beginning to screen for

¹² Courts have moved in this direction because it is arguably unfair to have a case turn on whether a plaintiff can find a witness who will claim the chance of recovery was 51 percent, rather than 49 percent. More importantly, the courts did not want negligent physicians to be shielded from liability just because the patient had less than a 50 percent chance of survival when he or she entered medical care (96).

¹³ *Herskovits v. Group Health Cooperative of Puget Sound*, 664 P. 2d 474, 481 (1983).

¹⁴ *Herskovits v. Group Health Cooperative of Puget Sound*, 664 P. 2d 474, 481 (1983).

¹⁵ *Toth v. Community Hospital*, 239 N.E. 2d 368 (N.Y. 1968).

serious conditions in low-risk populations, then the standard of care in the profession may change. If ordering diagnostic tests on low-risk patients becomes more common, plaintiffs will have an easier time establishing that the failure to order the test was negligent, because more medical experts will be willing to testify that such testing is the standard of care. Gradually, the standard of care will be “ratcheted up” as physicians respond to the increasing threat of malpractice for failure to diagnose. Eventually, physicians may cease to characterize or even think about their actions as “defensive.”

terize or even think about their actions as “defensive.”

Hospitals, HMO's, and malpractice insurers often have risk management and quality assurance programs that seek to minimize the number of adverse events and malpractice suits and improve the quality of care by changing physician behavior.

Many risk management activities are directed toward nonphysician hospital employees (e.g., nursing staff) (41), but risk management programs are increasingly focusing on reducing the risk of injury in clinical care (41, 120, 163, 167).

Because risk management is an administrative function, risk managers are unlikely to be clinically trained. Recently, however, nurses have played a more active role in risk management (41, 237). Risk managers do not typically develop clinical protocols for physicians but instead spend much of their time working with the hospital and legal personnel to address existing and potential claims.

Larger risk management programs provide educational information on the kinds of suits that are brought and analysis of how these suits might be prevented+. g., through better communication with patients, better informed consent, and implementation of systems designed to minimize human error (46, 181, 182, 183, 184, 196, 237),

The most common recommendations of risk managers are to document the record completely and to obtain informed consent (5, 36, 46). Sys-

tems can also be set up to prevent mistakes that can lead to injuries. For example, protocols are often set up to account for all sponges and instruments after surgery, or to ensure that the correct heart valve is selected during surgery (163, 237). OTA learned in interviews with risk managers that they may also recommend *removing* technology if the staff does not know how to use it properly; for example, removing fetal monitors from an emergency room, closing underequipped or understaffed facilities, or referring difficult cases to specialists.

How physicians respond to information promulgated through risk management programs has not been studied. Although risk managers stress documenting the chart, communicating with the patient, and obtaining informed consent, physicians' preferred method of documenting diagnosis may sometimes be to perform additional tests and procedures (46, 86). For example, in a risk management study of Erb's Palsy and shoulder dystocia conducted by the Risk Management Foundation of the Harvard Medical Institutions, physicians were told:

although shoulder dystocia occurs infrequently and largely unexpectedly, assessing risk factors such as maternal diabetes or large fetus (4000 grams or more) may help obstetricians anticipate shoulder dystocia . . . Obstetricians should document any evaluation performed for these conditions as well as their conclusions and followup. (217)

This guidance appeared with a review of malpractice claims that included an allegation of failure to do an ultrasound to evaluate cephalopelvic disproportion (217). Physicians could interpret such information as a suggestion that they perform routine intrapartum ultrasound to evaluate fetal size.

.A trend in recent years is the linkage of risk management with quality assurance activities. The Joint Commission on Accreditation of Health Care Organizations requires that hospitals seeking accreditation have programs linking risk management with quality assurance (167). American Health Care Systems Inc., has published a model

program for integrating quality and risk management activities in multihospital systems (4).

Quality assurance in hospitals or other institutions is usually overseen by physicians (42,46, 163). The quality assurance process is often triggered by reports from the risk management department (41,163).

In some quality assurance programs, protocols are designed specifically to reduce the number of malpractice claims. For example, several clinical departments of the Harvard University-affiliated medical institutions use protocols for anesthesia, obstetrics, and radiology that were designed to address problems identified in reviews of malpractice claims (99). These guidelines primarily address proper documentation, prompt and accurate communication of clinical data among staff, informed consent, and monitoring of patients.¹⁶ The guidelines are voluntary, but they have been widely adopted within the Harvard Medical Institutions (99).

Certain malpractice insurers—mainly physician-owned companies—develop guidelines to prevent malpractice claims (19,223). Some insurer guidelines are mandatory clinical protocols that physicians must follow to maintain coverage, although physicians may deviate from the guidelines with proper documentation (19,43,154). These protocols are often developed through a consensus development process among physicians using medical literature and expert consultants.

If these guidelines and protocols improve outcomes of care and minimize errors, then they may be an appropriate response to the signals from the malpractice system, even if they involve increasing the number of procedures or services provided. That is, they may promote quality-enhancing rather than wasteful defensive medicine.

Risk managers contacted by OTA and others who were involved in quality control consistently stated that their quality assurance programs did not promote unnecessary tests and procedures (80,163,237). However, risk management and quality assurance programs may at times encourage broader use of certain tests and procedures in order to avoid the potential for serious, but remote, adverse outcomes. Whether these measures are unnecessary is a value judgment. If the risk management process is insulated from pressures to control health care spending, recommendations are unlikely to reflect a balancing of cost and outcome considerations.

In contrast to risk management and quality assurance programs, the individual physician does not undertake a specific review of claims but instead reacts to a less organized signal and tries to anticipate future suits. This reactive and emotional process may be even more likely to lead to defensive medicine than the systematic claims review and guideline development done by hospitals, HMOs, and malpractice insurers.

■ The Role of Graduate Medical Education in Teaching Defensive Medicine

Although medical students become aware of liability issues during their 4 years of undergraduate medical education, it is not until residency training—when they first become intimately involved in medical decisionmaking—that their concerns have an opportunity to influence the course of patient care.¹⁷

Medical residents are shielded from the threat of personal liability to a greater extent than practicing physicians because residents are covered under the insurance policies of the hospitals where

¹⁶ The anesthesia guidelines largely deal with better monitoring of patients; for example, blood pressure and heart rates taken every 5 minutes and continuous monitoring of the patient's ventilation and circulation. These guidelines also encourage the use of specific technologies for monitoring, including pulse oximeters (60).

¹⁷ Postgraduate medical training lasts from 1 to 5 years, depending on the specialty. The first year is the equivalent of a general internship, where trainees rotate through a number of departments and learn the basic elements of a variety of areas of practice. For physicians who pursue specialty training, training becomes more specialized beginning in the second postgraduate year.

they train. The ultimate liability for their actions rests with the hospital and the attending physician who supervises and gives final approval for all patient care decisions.

Residents are not entirely deaf to the malpractice signal, however. First, residents can be and sometimes are named in malpractice actions.¹⁸ Second, residents feel pressure to protect not only themselves but also their supervisors and attending physicians from liability stemming from their own errors—and all this during a period when they are only beginning to develop a sense of confidence in their own clinical skills (69,146).

Whether and to what extent medical residents respond by consciously practicing defensive medicine is difficult to ascertain. Studies of defensive medicine among residents are old and may be obsolete because changes in hospital liability during the 1980s increased residents' personal exposure to malpractice liability.

- In a 1981 study, residents and medical faculty cited inexperience, habit, pressure from others, reliance on lab results to follow daily progress, and substitution of lab tests for clinical judgment as the leading reasons for excessive diagnostic testing (258). Malpractice concerns were ranked last out of 19 reasons for excessive testing.
- In a 1978 study of laboratory testing by first-year residents in internal medicine, residents classified only 2 percent of tests as having been motivated by medicolegal concerns (71).

To understand better whether and how defensive medicine is “taught” during graduate medical education, OTA conducted structured interviews with residents and faculty in internal medicine and obstetrics/gynecology at two academic medical centers—one in a large urban area and the other in a small city. Because of the limited number and

type of programs studied, it is difficult to draw any broad generalizations from the interviews about the teaching of defensive medicine during graduate medical training. However, responses to the interviews suggested the following findings regarding the role of graduate medical education in promoting defensive medicine:

- Malpractice concerns were noted by residents and faculty in all four (mining programs, but the extent of concern varied greatly across department specialty, geographic location, and individual attending physician. Concern appeared to be more pervasive in obstetrics/gynecology than in internal medicine and more heightened in the metropolitan training center than at the training center in a small city (see box 2-1).
- Limited formal instruction on malpractice Issues in organized classes and conferences does exist, but defensive medicine is not taught explicitly at these seminars.
- In general, residents are exposed to many different practice styles during their training. The extent to which they are exposed to defensive medicine practices depends in large part on the practice styles of the faculty with whom they work most closely. Some faculty and senior residents in each of the four centers acknowledge that they teach some defensive practices to junior residents; others claim they do not.
- [formation about defensive medicine is conveyed not only consciously but also unknowingly by faculty and senior residents.
- Recordkeeping, patient communication, informed consent, hospital admissions, referrals and consultations, and use of additional tests and procedures were all cited by faculty and residents as examples of defensive practices

¹⁸ For example, data from the major insurer of physicians in the Harvard teaching institutions show that during the period 1982-92, the risk of being named in a lawsuit was 2.2 per 100 physician-years of coverage for residents and fellows versus 3.4 for attending physicians (52). The experience of the Harvard teaching institutions is comparable to that of other major teaching institutions (51).

BOX 2-1: The Role of Graduate Medical Education in Defensive Medicine: Selected Impressions of Faculty and Residents at Two Training Hospitals^a

Obstetrics and Gynecology Training Program, Medical Center A

Faculty

- "[It is] very difficult for residents to escape sensing concern [about malpractice] Nonetheless everyone here has as a first goal to do the right thing by the patient I do not think that anyone is cold enough to reduce liability at the expense of mistreating or not adequately treating the patient a second concern, and a close second is creating a scenario that makes it less likely that the patient will sue "
- "A lot of defensive procedures that are incorporated in our practice are not consciously acknowledged to be defensive procedures."
- "If I have a patient with a gastrointestinal complaint and I think I know what it is I may still be inclined to refer her to a specialist even though I can treat it myself I know that there is back-up here I have not explicitly taught this to residents but they get a sense of it "
- "The minor purpose of the chart [i.e. the medical record] is to inform other practitioners about the care of the patient The major purpose is to defend physicians in lawsuits."

Residents:

- "Being a product of a medicolegal climate, I know that I practice very defensive medicine and frankly I think this is good medicine."

Obstetrics and Gynecology Training Program, Medical Center B

Faculty:

- "People here are not obsessed with liability issues. But we know that they exist. [The overall philosophy of the department is to] "... teach good medicine - good practice in obstetrics and gynecology. That in itself should take care of the majority of potential litigation."
- "Malpractice suit discussion is a daily occurrence. There is an ongoing series for faculty on risk reduction and malpractice. We have required attendance. It is a constant topic. This reflects in our teaching—we try to make everyone aware of malpractice issues."
- "We emphasize accurate records strongly. If there is ever a question of medical care in the future, the lack of documentation is noted. You do it not because you are worried about litigation, but because it is the best way to practice medicine."

Residents:

- [As a result of one malpractice case at the hospital] "The practice of the [rotational forceps] procedure went down logarithmically. There is great hesitation on the part of the faculty to suggest rotational forceps delivery. As such, there is a whole generation of residents who are not skilled in that obstetric practice. We are told not to do it because of the possibility of a malpractice case."

Internal Medicine Training Program, Medical Center A

Faculty:

- "When I started out as an intern ... it was expected that I would practice medicine by ordering tests ... I still fight against it, and when I became a senior resident, I told [junior residents] which tests were and which were not appropriate."

Residents:

- "The attendings are academic and very diligent about making smart and rational decisions and not worried much about defensive medicine."

(continued)

**BOX 2-1: The Role of Graduate Medical Education in Defensive Medicine:
Selected Impressions of Faculty and Residents at Two Training Hospitals^a (Cont'd.)**

Internal Medicine Training Program, Medical Center B

Faculty.

- "I do not discuss, implicitly explicitly, a defensive posture with patients I view the concept of defensive medicine as poor medical practice. You are doing something unnecessary to cover yourself and we do not stress for our residents that we should do that But I have had residents say I think we are going to be sued, ' and my usual response is to shrug my shoulders and say do the right thing."
- "I cannot say that after or during a case I do not consider the legal ramifications, but I still try to make my decisions based on the patient and not on the legal system "

Residents.

- "If someone is explicit [about teaching defensive medicine], it makes me question it more and say that is a stupid reason and you should not do it If it is implicit, it is insidious "

^aCenter A is in a large metropolitan area center B is in a small city

taught to varying degrees during residency. Among these examples, the most commonly mentioned was documentation of patient care.

- Most residents leave training thinking they have to protect themselves against medical malpractice litigation when they go into practice. The effects of graduate medical education on the subsequent practice of defensive medicine by trained physicians vary depending on the degree to which they were exposed to it during training and the length of time elapsed since completion of training.

For some time now, there has been a movement afoot to restructure residency programs (247). It is unclear exactly what direction these reforms might take; however, to the extent that any future reforms affect the relationships between and among hospitals, teaching faculty, and residents, they may also affect the channels through which defensive practices are currently taught to young physicians in training. For example, if more of residency training is shifted to ambulatory care settings, the role of the large medical institution as a source of the standards and values of a resident future professional career may be diminished.

OTA's interviews, as well as literature on the sociology of medical education, suggest that the molding of a student's practice style depends heavily on the practice style of his or her "mentor" as well as the general culture of the particular

training program (69). Because it is unclear what type of practice setting—academic, hospital-based, community-based—is most conducive to the practice of defensive medicine, it is difficult to predict whether a shift from one setting to another would on balance increase or decrease the teaching of defensive medicine.

CONCLUSIONS

Under OTA's definition, defensive medicine occurs when doctors order tests, procedures, or visits, or avoid high-risk patients or procedures, primarily (but not necessarily so/e/}) to reduce their exposure to malpractice liability. This definition recognizes that practices regarded as defensive may be motivated by other factors in addition to liability concerns (e.g., medical benefit, financial incentives) and may be either quality-enhancing or quality-reducing. Due to lack of information on the relative effectiveness of many medical interventions, as well as lack of consensus on what level of risk individuals or society are willing to accept, it is difficult if not impossible to classify most instances of defensive medicine as purely "good" or "bad." In addition, a substantial proportion of defensive medicine may occur unconsciously—i.e., physicians may follow practices that initially evolved out of liability concerns but later became customary practice.

Physicians receive “signals” from the malpractice system in a variety of ways, including personal litigation experience, the experience of their colleagues, the media, risk management and quality assurance activities, and their malpractice insurance premiums. Although it is unclear whether and to what extent these “malpractice signals” affect physician practice, it has been documented that physicians consistently overestimate their own and their colleagues’ risk of being sued. Physicians are concerned about the professional, fi-

nancial, and psychological consequences of litigation but, on balance, they tend to overestimate the risk of these effects as well.

Young physicians in residency training may be particularly susceptible to learning defensive practices—either explicitly or implicitly—from their supervisors and faculty. Graduate medical education may thus help perpetuate defensive medicine at both the conscious and unconscious levels.