WISCONSIN STATE LEGISLATURE COMMITTEE HEARING RECORDS

2005-06

(session year)

Assembly

(Assembly, Senate or Joint)

Committee on Insurance (AC-In)

(Form Updated: 11/20/2008)

COMMITTEE NOTICES ...

➢ Committee Reports ... CR

**

➢ Executive Sessions ... ES

**

➢ Public Hearings ... PH

**

➢ Record of Comm. Proceedings ... RCP

**

INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL ...

➢ Appointments ... Appt

**

Name:

➢ Clearinghouse Rules ... CRule

**

➢ Hearing Records ... HR (bills and resolutions)

**

➢ Miscellaneous ... Misc

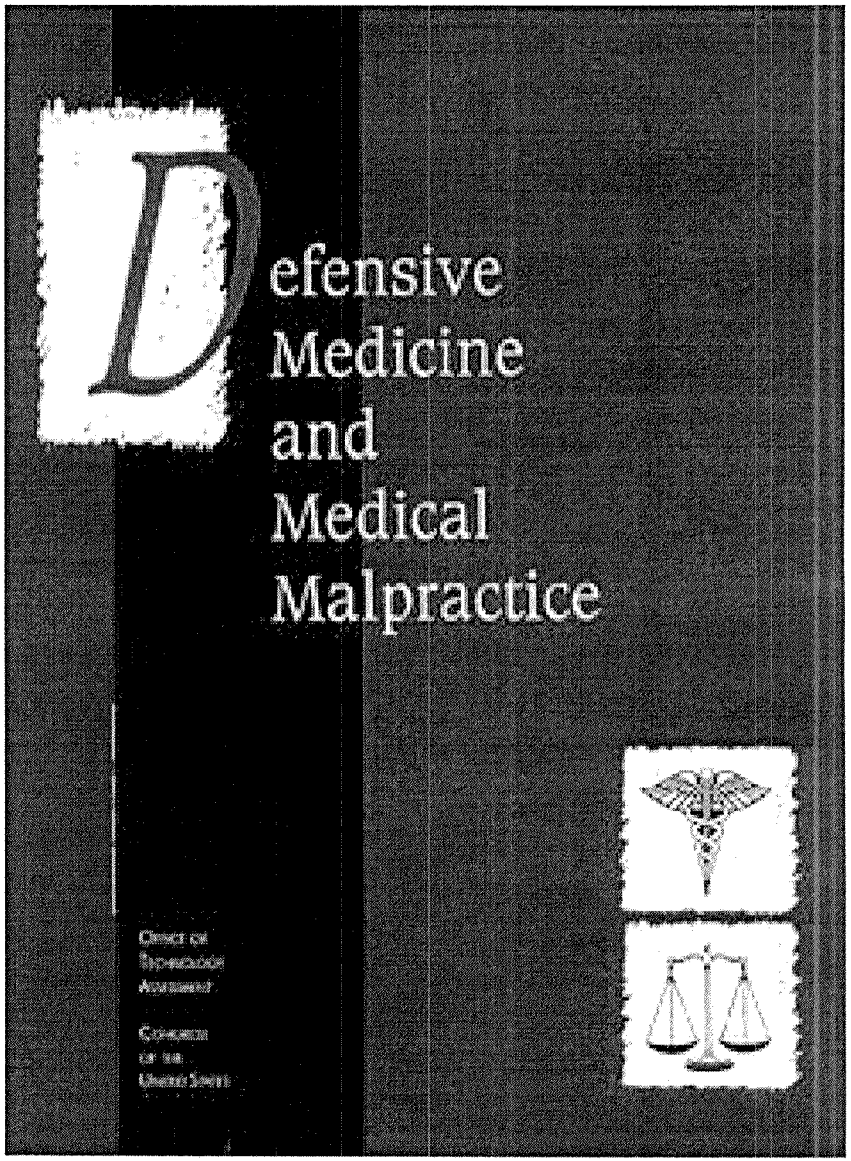
05hr_AC-In_Misc_pt13a

(misc. 1994 documents)

Defensive Medicine and Medical Malpractice

July 1994

OTA-H-602
NTIS order #PB94-193257
GPO stock #052-003-01377-1



Recommended Citation: U.S. Congress, Office of Technology Assessment, *Defensive Medicine and Medical Malpractice, OTA-H--6O2* (Washington, DC: U.S. Government Printing Office, July 1994).

Foreword

The medical malpractice system has frequently been cited as a contributor to increasing health care costs and has been targeted in many health care reform proposals as a potential source of savings. The medical malpractice system can add to the costs of health care directly through increases in malpractice insurance premiums, which may be passed on to consumers and third-party payers in the form of higher fees. However, total direct costs of the medical malpractice system represent less than 1 percent of overall health care costs in the United States.

The medical malpractice system may also increase costs indirectly by encouraging physicians to practice defensive medicine. In this assessment, the Office of Technology Assessment first examines the nature of defensive medicine, adopting a working definition of defensive medicine that embraces the complexity of the problem from both the physician and broader public policy perspectives. It then presents and critically examines existing as well as new evidence on the extent of defensive medicine. Finally, it comments on the potential impact of a variety of medical malpractice reforms on the practice of defensive medicine.

This assessment was prepared in response to a request by the House Committee on Ways and Means and the Senate Committee on Labor and Human Resources. The report was prepared by OTA staff, but OTA gratefully acknowledges the contributions of the assessment advisory panel, numerous researchers who did work under contract to OTA, and many other individuals who provided valuable information and reviewed preliminary drafts. As with all OTA documents, the final responsibility for the content of the assessment rests with OTA.

ROGER C. HERDMAN
Director

Advisory Panel

R. Randall Bovbjerg
Panel Chair
Senior Research Associate
The Urban Institute
Washington, DC

John Ball
Executive Vice President
American College of Physicians
Philadelphia, PA

James Blumstein
Professor of Law
Vanderbilt University Law School
Nashville, TN

Troyen Brennan
Associate Professor
Department of Medicine
Harvard Medical School
Boston, MA

Brad Cohn
President
Physician Insurers Association of America
San Francisco, CA

Edward David
Chairman
Maine Board of Registration in Medicine
Bangor, ME

Richard Frank
Professor
Department of Health Policy and Management
School of Hygiene and Public Health
The Johns Hopkins University
Baltimore, MD

Pamela Gilbert
D irector
Public Citizen Congress Watch
Washington, DC

Rodney Hayward
Assistant Professor
Department of Internal Medicine
University of Michigan School of Medicine
Ann Arbor, MI

Richard Kravitz
Assistant Professor of Medicine
University of California, Davis
Sacramento, CA

George Malkasian
Department of Obstetrics and Gynecology
Mayo Clinic
Rochester, MN

Barry Manuel
Associate Dean
Boston University College of Medicine
Boston, MA

J. Douglas Peters
Charfoos and Christensen
Attorneys at Law
Detroit, MI

Richmond Prescott
Former Associate Executive Director
The Permanante Medical Group, Inc.
San Francisco, CA

David Sundwall
Vice president and Medical Director
American Healthcare Systems Institute
Washington, DC

Laurence Tancredi
Private Consultant
Ncw York, NY

James Todd
Executive Vice President
American Medical Association
Chicago, IL

Note: OTA appreciatess and is grateful for the valuable assistance and thoughtful critiques provided by the advisory panel members. The panel does not. however-, necessarily disapprove, or endorse this report. OTA assumes fu!l responsibility for the rcport and the accuracy of its contents.

Project Staff

Clyde J. Behney
Assistant Director, OTA

Sean R. Tunis
Health Program Director

PROJECT STAFF

Judith L. Wagner
Project Director

Jacqueline A. Corrigan
Scnior Analyst

David Klingman
Senior Analyst

Leah Wolfe
Analyst

Philip T. Polishuk
Research Analyst

ADMINISTRATIVE STAFF

Beckie Erickson
Office Administrator

Daniel B. Carson
P.C. Specialist

Carolyn Martin
Word Processing Specialist

PRINCIPAL CONSULTANTS

Russell Localio
Pcnnsylvania State University

Jeremy Sugarman
Duke University

CONTRACTORS

Laura-Mae Baldwin
University of Washington

Kevin Grumbach
University of California/San Francisco

Eleanor Kinney
Indiana Univcrsity

Laura Morlock
The Johns Hopkins Univcrsity

Pony Ehrenhaft
Consultant

Mark Hall
Wake Forest School of Law

Harold S. Luft
University of California/San Francisco

John Rolph
RAND

Gloria Ruby
Consultant

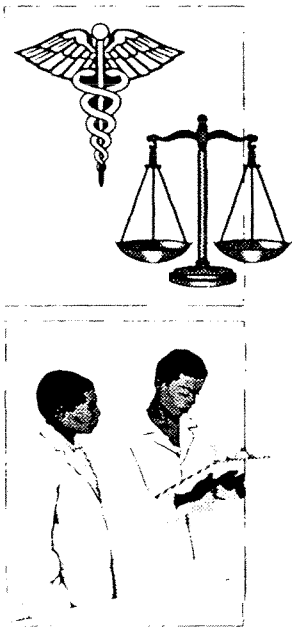
Peter Glassman
RAND

Peter Jacobson
RAND

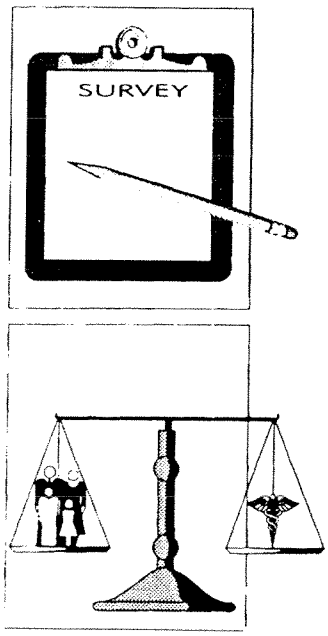
Thomas Metzloff
Duke University

John Rosenquist
University of California/Davis

Contents



APPENDIXES



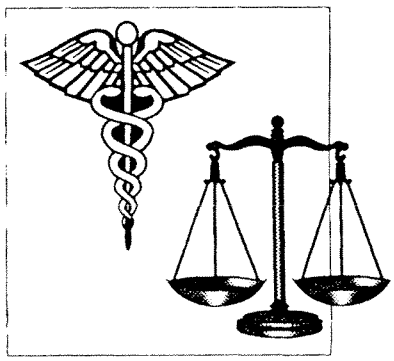
Findings and Policy Options 1

SUMMARY OF FINDINGS

. Defensive medicine occurs when doctors order tests, procedures, or visits, or avoid certain high-risk patients or procedures, primarily (but not necessarily solely) because of concern about malpractice liability.

- Most defensive medicine is not of zero benefit. Instead, fear of liability pushes physicians' tolerance for medical uncertainty to low levels, where the expected benefits are very small and the costs are high.
- Many physicians say they would order aggressive diagnostic procedures in cases where conservative management is considered medically acceptable by professional expert panels. Most physicians who practice in this manner would do so primarily because they believe such procedures are medically indicated, not primarily because of concerns about liability.
- It is impossible to accurately measure the overall level and national cost of defensive medicine. The best that can be done is to develop a rough estimate of the upper limits of the extent of certain components of defensive medicine.

Overall, a small percentage of *diagnostic* procedures--certainly less than 8 percent—is likely to be caused primarily by *conscious* concern about malpractice liability. This estimate is based on physicians' responses to hypothetical clinical scenarios that were designed to be malpractice-sensitive; hence, it overestimates the rate at which defensive medicine is consciously practiced in diagnostic situations.



- Defensive medicine has a substantial influence on physicians' behavior in certain isolated clinical situations; for example, Caesarean deliveries in childbirth and the management of head injuries in emergency rooms.
- Physicians are very conscious of the risk of being sued and tend to overestimate that risk. A large number of physicians believe that being sued will adversely affect their professional, financial. and emotional status.
- The role of the malpractice system as a deterrent against too little or poor-quality care--one of its intended purposes—has not been carefully studied.
- Traditional tort reforms—particularly caps on damages and amendments to the "collateral source" rule—reduce malpractice insurance premiums, but their effects on defensive medicine are largely unknown and are likely to be small. To the extent that these reforms *do* reduce defensive medicine, they do so without differentiating between defensive practices that are medically appropriate and those that are wasteful or very costly in relation to their benefits.
- One malpractice reform that directly targets wasteful and low-benefit defensive medicine is to enhance the evidentiary status in malpractice court cases of selected clinical practice guidelines that address situations in which defensive medicine is a major problem. The overall effects of this reform on health care costs would probably be small, however, because only a few clinical situat ions represent clear cases of wasteful or low-benefit defensive medicine.
- The fee-for-service system both empowers and encourages physicians to practice very low-risk medicine. Health care reform may change financial incentives toward doing fewer rather than more tests and procedures. If that happens, concerns about malpractice liability may act to check potential tendencies to provide too few services.

INTRODUCTION

For more than two decades many physicians. researchers, and government officials have claimed that the most damaging and costly result of the medical malpractice system as it has evolved in the United States is the practice of defensive medicine: the ordering of tests, procedures, and visits, or avoidance of certain procedures or patients, due to concern about malpractice liability risk.

Calls for reform of the medical malpractice system have rested partly on arguments that such reforms would save health care costs by reducing doctors' incentives to practice defensively. Such an argument even found its way into the 1992 presidential debates, when President Bush contended that "the malpractice ...trial lawyers' lawsuits ...are running the costs of medical care up $25 to $50 billion.'" (35)

Such claims notwithstanding, the extent of defensive medicine and its impact on health care costs remain a matter of controversy. Some critics claim that defensive medicine is nothing more than a convenient explanation for practices that physicians would engage in even if there were no malpractice law or malpractice lawyers.

This Office of Technology Assessment (OTA) study of defensive medicine grew out of congressional interest in understanding the extent to which defensive medicine does. indeed, influence medical practice and how various approaches to reforming the malpractice system might alter these behaviors.

The assessment was first requested by Congressman Bill Archer, Ranking Republican Member of the Committee on Ways and Means, and Senator Orrin Hatch, a member of OTA's Technology Assessment Board. Other members of OTA's Technology Assessment Board also requested that OTA examine these issues, including Senator Edward M. Kennedy, Chairman of the Committee on Labor and Human Resources: Congressman John D. Dingell, Chairman of the Committee on Energy and Commerce: and Senators Charles E. Grassley and Dave Durenberger.

OTA addressed the following questions:

- What is defensive medicine and how can it be measured?
- What are the causes of defensive medicine?
- How widespread is defensive medicine today?
- What effect will current proposals for malpractice reform have on the practice of defensive medicine?
- What are the implications of other aspects of health care reform for the practice of defensive medicine?

OTA also published a background paper in September 1993, *Impact of Legal Reforms on Medical Malpractice Costs,* which summarizes the current status of malpractice law reforms in the 50 states and evaluates the best available evidence on the effect of malpractice system reforms on physicians' malpractice insurance premiums.

DEFINING DEFENSIVE MEDICINE

OTA defines defensive medicine 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.*

Under this definition, a medical practice is defensive even if it is done for other reasons (such as belief in a procedure effectiveness, desire to reduce medical uncertainty, or financial incentives), provided that the primary motive is to avoid malpractice risk. Also, the motive need not be conscious. Over time some medical practices may become so ingrained in customary practice that physicians are unaware that liability concerns originally motivated their use.

Most importantly, defensive medicine is not always bad for patients. Although political or media references to defensive medicine almost always imply unnecessary and costly procedures, OTA's definition does not exclude practices that may benefit patients. Rather, OTA concluded that a high percentage of defensive medical procedures are ordered to minimize the risk of being wrong when the medical consequences of being wrong are severe:

> **OTA** asked panels of experts in three medical specialties-cardiology, obstetrics/gynecology (OB/GYN), and surgery-to identify clinical scenarios in which they would expect the threat of a malpractice suit to play a major role in their own or their colleagues' clinical decisions. **The** groups identified over 75 scenarios, all of which involved a patient presenting with a probable minor condition but with a small chance for a potentially very serious or fatal condition.

Thus, concern about malpractice liability pushes physicians' tolerance for uncertainty about medical outcomes to very low levels. Stated another way, concerns about liability drive doctors to order tests, procedures, and specialist consultations whose expected benefits are very low. Using such medical technologies and services to reduce risk to the lowest possible level is likely to be very costly even when the price of the procedure is low, because for every case where its performance makes the life-or-death difference, there will be many additional cases where its performance is clinically inconsequential.

THE EXTENT OF DEFENSIVE MEDICINE

Measuring Defensive Medicine

OTA searched for evidence of defensive medicine in the existing literature and also conducted and contracted for new analyses where feasibility and

Physicians may stop performing certain tests or procedures if by doing so they can eliminate the need for costly or hard-to-find malpractice insurance to cover these activities. The most frequently cited examples of negative defensive medicine are decisions by family practitioners and even some obstetrician-gynecologists to stop providing obstetric services. These decisions may be a result of higher malpractice insurance premiums for physicians who deliver babies.

costs permitted. One conclusion from these efforts is that accurate measurement of the extent of this phenomenon is virtually impossible.

There are only two possible approaches to estimating how often doctors do (or do not do) procedures for defensive reasons: ask them directly in surveys, or link differences in their actual procedure utilization rates to differences in their risk of liability. Both of these approaches have serious limitations.

If physicians are asked how often they practice defensive medicine in survey questionnaires, they may be inclined to respond with the answer most likely to elicit a favorable political response and thus exaggerate their true level of concern about malpractice. Even when physicians are asked in a more neutral instrument what they would do in certain clinical situations and why, they might be prompted if one of the potential listed reasons relates to concern about malpractice suits. On the other hand, without listed reasons from which to choose, physicians may respond as if the survey is a medical board examination and justify their choices on purely clinical grounds when other factors do in fact operate. In addition, surveys cannot uncover defensive practices performed unconsciously by physicians. In short, surveys can elicit responses that are biased in either direction.

These obvious problems suggest that it might be better to start with actual behavior as recorded in data on utilization of procedures and try to ascertain the percentage of use that arises from fear of malpractice suits. The only way to measure such a percentage is to relate variations in utilization across physicians to variations in the strength of the "malpractice signal" across physicians. For example, physicians practicing in hospitals or communities with high rates of malpractice claims or high malpractice premiums might be more sensitive to malpractice risks and alter their practices accordingly. Statistical analyses of such variations could pick up these differential effects.

To take this tack, data must be available to control for other factors that can account for differences among physicians in their utilization of services, including the health status of the patient population. Often such data are unavailable.

Even more troublesome is the fact that this approach can pick up only the *incremental* effects of stronger versus weaker malpractice signals. It cannot accurately assess the generalized "baseline" level of defensive medicine that may exist in all physicians' practices. Professional society newsletters and other national media often report on especially large or unusual jury verdicts. Physicians may react to these news items as vigorously as they would to their own or their colleagues experience with malpractice claims. Physicians may be almost as defensive if they face a small risk of being sued as they are if they face a higher risk. This is especially likely if they have the power, with no negative and sometimes positive financial consequences, to order tests and procedures that reduce medical risks to their lowest feasible level.

Despite these problems, OTA undertook new analyses that offered the best chance, within time and budgetary constraints, of adding to the current state of knowledge about the scope of defensive medical practice while acknowledging the methodological problems described above. OTA-initiated studies included the following:

- Four separate physician surveys (conducted jointly with three medical specialty societies) containing hypothetical clinical scenarios that asked respondents to indicate what clinical actions they would take and the reasons for them. The survey materials contained no references to suggest that OTA's purpose was to study malpractice or defensive medicine, though malpractice concern was one of five reasons listed for each possible course of action.
- An analysis of the relationship between the use of prenatal care services in low-risk pregnancy and the level of malpractice risk facing doctors in Washington State.
- An analysis of the relationship between New Jersey physicians' responses on a clinical scenario survey and their personal malpractice claim history.

- An analysis relating changes in New York State physicians' obstetric malpractice insurance premiums to decisions to abandon the practice of obstetrics.

These analyses join a small preexisting literature and discussions with experts in the area to form the basis for OTA's findings. The following studies were particularly important evidence because of their relatively strong research designs:

- A study by Localio and colleagues of the relationship between Caesarean delivery rates and malpractice risk in New York State hospitals (128).
- A survey of physicians responses to clinical scenarios conducted by a Duke Law Journal project on medical malpractice (58).

Other studies, including the ninny direct physician surveys conducted over the years by national. state, and specialty medical societies. are reviewed by OTA in this report. Their results are highly suspect, however, because they invariably prompt responding physicians to consider malpractice liability as a factor in their practice choices.

OTA's Clinical Scenario Surveys

OTA collaborated with three medical specialty societies to survey their member physicians using hypothetical clinical scenarios. The three medical specialty societies were the American College of Cardiology, the American College of Obstetricians and Gynecologists, and the American College of Surgeons. Each of these groups cooperated with OTA to convene a panel of experts, identify clinical scenarios, draw stratified national samples of their memberships, and generally assist in the development and implementation of the surveys.

The selected scenarios were clinical situations that the panel identified as likely to provoke the practice of defensive medicine. All but one of the nine clinical scenarios ultimately selected for inclusion in the four surveys involved clinical encounters requiring some diagnostic judgment or action.[2] Virtually all of the clinical scenarios involved patients whose presenting signs and symptoms would suggest only minor injury or a self-limiting problem, with a very small outside chance of a debilitating or life-threatening illness. Although the panelists were not asked to assess the appropriateness of different clinical actions or procedures, implicit in their creation of each scenario was the idea that conservative treatment was an acceptable course of action.

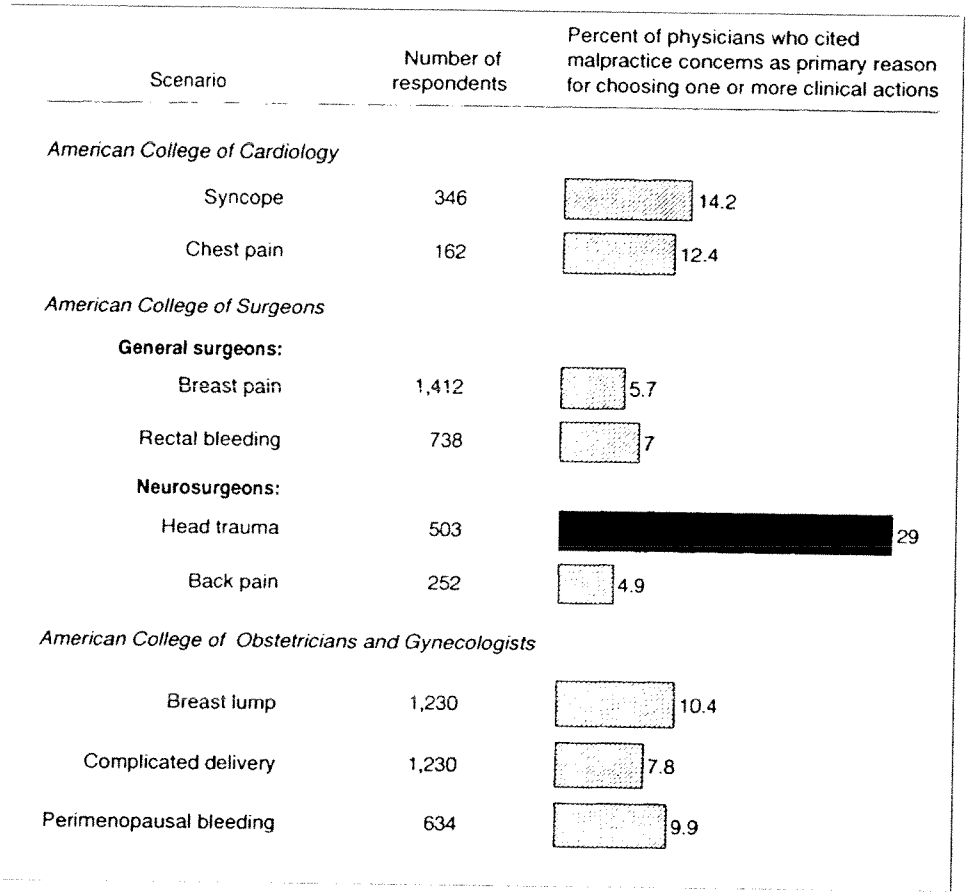
Across the scenarios, between 5 and 29 percent of all responding physicians cited malpractice concern as the primary reason for choosing at least one clinical action (figure 1-1), Yet, in six of the nine scenarios, defensive medicine was cited by less than 10 percent of all physicians as the primary reason for choosing at least one clinical action. The scenario with the greatest evidence of defensive medicine was a case of a 15-year-old boy with a minor head injury resulting from a skateboard accident. In that case, almost one-half of all respondents reported that they would order a computed tomography (CT) scan, and 45 percent of those who said they would order it would do so primarily out of concern for malpractice.

Figure 1-2 shows the specific clinical actions with the *highest* reported rates of defensive medicine. These procedures constitute only 23 out of the 54 "interventionist" actions in the nine scenarios (i.e.. other than waiting or doing nothing). Physicians who reported they would order the procedure said they would do so primarily out of concern about malpractice between 11 and 53 percent of the time. Yet. the percentage of responses in which the procedure would be ordered out of concern for malpractice seldom exceeded 5 percent, because relatively few physicians reported that they would choose the procedure at all.

Across all possible actions in the nine scenarios, excluding waiting or doing nothing, a me-

[2] The only nondiagnostic scenario involved obstetrical management of a difficult labor, in which diagnostic uncertainty plays a role in determining the course of action.

FIGURE 1-1: Extent of Defensive Medicine in the OTA Clinical Scenario Surveys



NOTE Results are weighted to reflect the total population of professional society members on which the survey sample was based Numbers reflect responses to "case" versions of the scenarious only (see ch 3) See table 3-2 for confidence intervals of these proportions

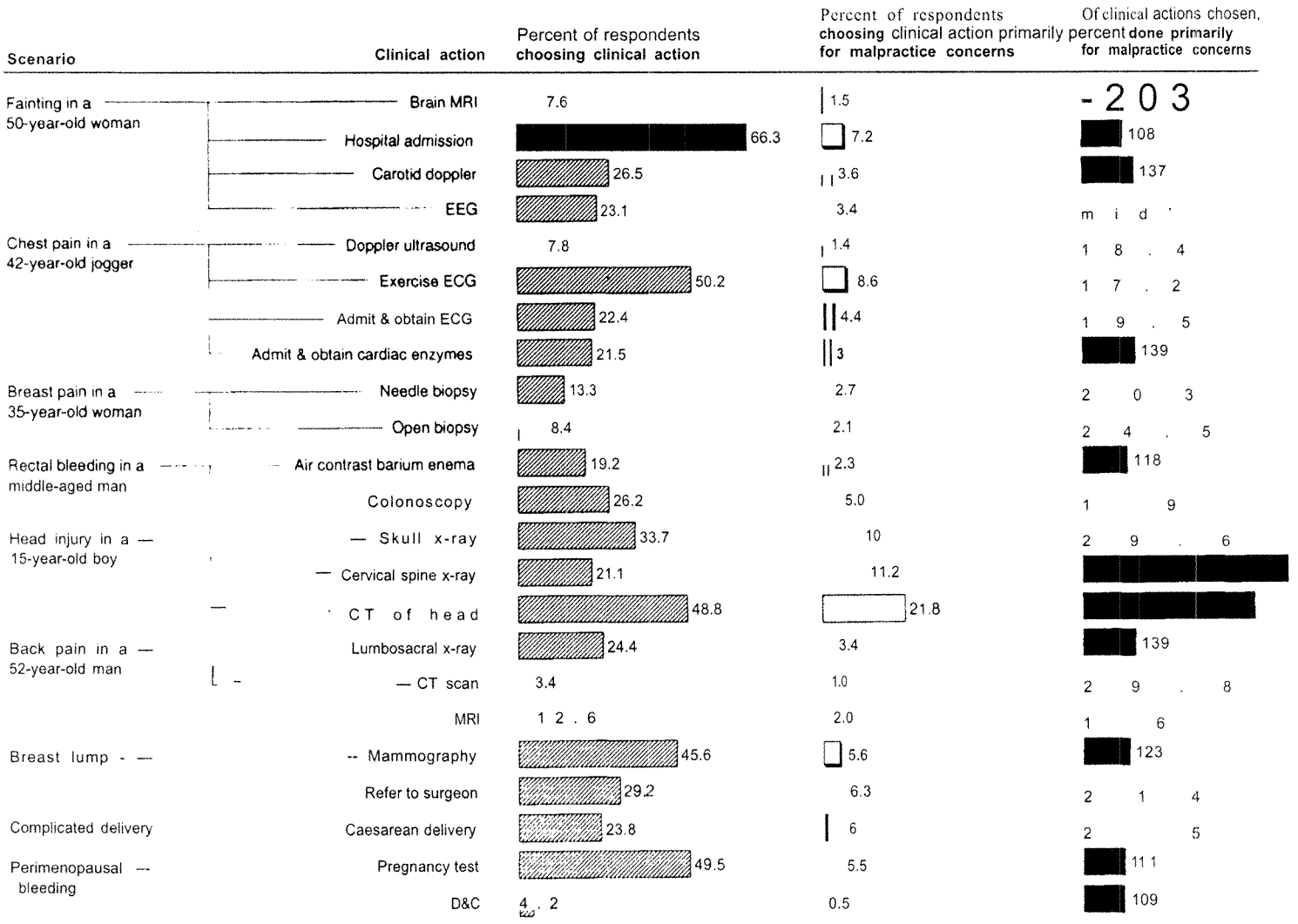
SOURCE Off Ice of Technology Assessment, 1994

dian[3] of 8 percent of those who chose the procedure or hospital admission said they would do so primarily because of malpractice concerns (see table 3-3 in chapter 3).

The surveys covered only three medical specialties, at least two of which have relatively high exposure to malpractice liability. Also, the level of defensive medicine recorded in these scenarios is

[3] That is, one-half of the procedures had a percentage score higher than the median percentage; one-half had a percentage score that was lower than the median.

FIGURE 1-2: Frequent Occurrences of Defensive Medicine Reported in the OTA Clinical Scenario Surveys



KEY MRI – magnetic resonance image EEG - electroencephalogram ECG = electrocardiogram CT computed tomography D&C dilation and curettage

NOTES A *frequent* occurrence was defined as when at least 10 percent of physicians who would take the clinical action would do so primarily because of malpractice concerns Twenty-three out of a total of 54 clinical options (excluding waiting or doing nothing) in the OTA scenarios met this criterion (case scenarios only) See table 3-3 for complete results

SOURCE Office of Technology Assessment 1994 Data analyzed in collaboration with Dr Russell Localio of Pennsylvania State University

likely to be above average for diagnostic encounters, since the scenarios were explicitly designed to evoke concern about liability. Thus, a relativel y small proportion of diagnostic procedures overall--certainly less than 8 percent—is likely to be caused by conscious concern about malpractice liability.

In virtually all of the scenarios, many physicians chose aggressive patient management styles even though conservative management was considered medical] y acceptable by the expert panels. In most cases, however, it was medical indications, not malpractice concern, that motivated the interventions:

> For example, almost two-thirds of all cardiologists reported that they would hospitalize a 50-year-old woman who had fainted in a hot church with no other serious problems, but only 10.8 percent of those would do so primarily out of concern for malpractice risk. instead, the vast majority of those who would hospitalize a patient of this kind reported that they would do so primarily because it was medically indicated.

Thus, if malpractice risk is a **major** factor influencing physicians' actions in general, it is not conscious, but works indirectly over time through changes in physicians assessments of appropriate care.

It is impossible to use these very specific clinical scenarios to estimate overall health care costs that are due to defensive medicine. First, the scenarios were selected to heighten the probability of finding defensive practices. Second, they involve very specific presenting signs and symptoms. Slight changes in the scenarios might yield large changes in the kinds of procedures chosen and their consequent costs. OTA did estimate the national cost of defensive medicine for selected procedures in two scenarios: Caesarean delivery in a difficult labor, and diagnostic radiology in a young emergency room patient with minor head injury.

- The annual national cost of "defensive" Caesarean deliveries in cases of prolonged or dysfunctional labor in women between 30 and 39 years of age is approximately $8.7 million.
- The annual national cost of defensive radiologic procedures (CT scans, skull x-rays, and cervical spine x-rays) in children between 5 and 24 years of age arriving in emergency rooms with apparently minor head injuries is roughly $45 million.

Although these estimates in and of themselves represent a miniscule percentage of total health care costs, they cover on] y a few procedures performed in very specific clinical situations, and they reflect only that portion of defensive medicine that physicians practice consciously. The numbers suggest, however, that if conscious defensive medicine is costly in the aggregate, it would have to operate in a very large number of clinical situations, each contributing a relatively small amount to total costs.

Procedure Utilization Studies

OTA's review of the evidence relating actual use of services to measures of malpractice risk, including the OTA-sponsored studies using this approach, found only limited evidence that defensive medicine exists. The strongest evidence was produced in a study by Localio and colleagues of Caesarean deliveries in New York State (128):

> New York State obstetricians who practice in hospitals with high malpractice claim frequency and premiums do more Caesarean deliveries than do obstetricians practicing in areas with low malpractice claim frequency and premiums. The odds of a Caesarean delivery in a hospital with the highest frequency of obstetric malpractice claims were 32 percent higher than the odds of a Caesarean delivery in a hospital with the lowest frequency of obstetric malpractice claims (128).

Two OTA-sponsored research contracts that attempted to relate physicians' utilization rates to

their actual or perceived malpractice risks failed to find significant relationships between the risk of malpractice and physician behavior:

> A study of 1,963 low-risk pregnancies managed by 209 physicians in Washington State failed to find a significant relationship between physicians' personal malpractice suit history or the malpractice claims rate in the county and the use of selected services, such as diagnostic ultrasound early in pregnancy, referrals to specialists, and Caesarean delivery (10).

> A study of 835 New Jersey surgeons, cardiologists, obstetrician/gynecologists, and internal medicine specialists failed to find a significant relationship between physicians' personal malpractice suit history and their use of services as reported in their responses to hypothetical clinical scenarios (73)

Both of these studies were based on a small number of cases; consequently. failure to find a significant relationship could mean either that no relationship exists or that the studies lacked the statistical power to identify a significant relationship. Also, the New Jersey study did not examine the malpractice signal that physicians may receive because they practice in a high-risk locality. Nevertheless, if doctors do react to the strength of the 'malpractice signals" measured in these studies, the changes are not large enough to be detectable in studies of the size reported here.

OTA commissioned one study of "negative" defensive medicine—the decision not to provide a service because of concern about the risk of malpractice liability or the availability or cost of malpractice insurance. That study also failed to find significant effects:

> Doctors active in obstetrics in New York State in 1980 who experienced rapid increases in malpractice insurance premiums between 1980 and 1989 *were* NOT found to be more likely than physicians with lower premium increases to withdraw from obstetrics practice during the same period (81).

RECENT FACTORS AFFECTING THE AMOUNT OF DEFENSIVE MEDICINE

OTA staff talked with over 100 physicians and health care professionals about their beliefs regarding the existence and frequency of defensive medicine. These conversations reinforced the findings of opinion surveys that many physicians *believe* defensive medicine is an important and growing phenomenon that distorts their medical judgment in ways they find very troubling.

New Technology

Perceptions of increasing risk may arise from the continual development of new diagnostic techniques and improved therapies for serious conditions. Both of these technological trends could make the consequences of not testing more serious. The availability of more accurate or early tests or new therapies changes a natural risk—for example, the risk of death from disease—into a preventable risk, and places a new burden on the physician to correctly interpret the results of the test. When a medical technology is new, physicians may have greater uncertainty about the appropriate indications for its use and therefore more conscious concern about the potential for liability:

> A urologist interviewed by OTA described his practice of ordering a prostate specific antigen (PSA) test, a screening test for prostate cancer first available in 1990, on all men over age 50 who come to his office, regardless of their complaint, and despite his belief that the test may, in the end, do more harm than good

> A cardiology fellow who makes daily decisions about the choice of clot-dissolving drugs in heart attack patients described the difficulty she and her colleagues are having evaluating the evidence on the relative effectiveness of newer versus older drugs under specific conditions of use and in different kinds of patients She and her colleagues openly discuss the potential for a malpractice suit if a patient dies when the less costly thrombolytic agent is used

The fear of malpractice does not operate alone to stimulate the diffusion of new technologies, however. As with all medical practices, a complex array of factors influences physicians' decisions to adopt new technologies:

> In an OTA-sponsored study of low osmolality contrast agents (LOCAs), a new kind of contrast media injected in patients undergoing certain diagnostic x-ray examinations, Jacobson and Rosenquist found that legal concerns ranked seventh out of 11 possible factors in decisions on whether or not to use this expensive new technology. Clinical factors, such as patient safety and comfort, were ranked as the most important determinants by the responding physicians (105).

Changing Consequences of Malpractice Suits

Another reason for growing concern about the malpractice system is that the negative consequences to physicians of being sued appear to be on the rise. For the majority of physicians, a single malpractice suit does not have a significant impact on personal finances or professional status. Recent federal and state laws requiring reporting of malprtictice claims to a central repository. however, may increase the professional and financial significance of even a single lawsuit in the minds of physicians.

Since 1990, federal law has required malpractice insurers to report all payments on behalf of a physician to a National Practitioner Data Bank (NPDB). The NPDB maintains a short narrative on the incident. and this information must be accessed by hospitals when hiring new staff and every two years for review of current staff (45 C.F. R. Sec. 60. 10). It can also be accessed by other potential employers. Some states also have malpractice reporting requirements tied to licensing or disciplinary processes.

None of the federal or state databanks currently in place is open to the general public. Yet the ongoing debate as to whether to allow public access to the federal NPDB (165) may have already increased physicians' anxiety about being sued.

THE IMPACT OF MALPRACTICE REFORM ON DEFENSIVE MEDICINE

OTA assessed the impact of malpractice reforms on the practice of defensive medicine. Other impacts of malpractice reform may be as or even more important than defensive medicine, including impacts on:

- the quality of care,
- the physician-patient relationship,
- access to the legal system,
- the adequacy of compensation for medical injuries.

These other impacts of malpractice reform have been reviewed extensively elsewhere (12,21,37, 102,122,191 ,208a,243) and are not discussed at length in this report.

Predicting the impact of any malpractice reform on defensive medicine is very difficult, because there is little understanding of which specific aspects of the malpractice system actually drive physicians to practice defensively. Is it simply distaste for having one's clinical actions called into question? Is it distaste for having one's actions judged by lay juries? Is it a desire to avoid court trials? Is it a fear, however unfounded, of being financially ruined? Or is it the belief that the legal standard of care is so capricious that the system offers no clear guidelines for how to avoid liability?

The relative importance of each of these factors in explaining motivations for defensive medicine will determine the effect of specific malpractice reforms on defensive medicine. For example, if physicians are afraid only of the extremely low chance of financial ruin, then reforms that eliminate the possibility of such an event might reduce defensive medicine even with no major changes in the system. But if physicians abhor the prospect of having to defend their judgment in any forum, then malpractice reformers would have to find ways to substantially reduce the frequency with which claims are brought, regardless of the process for resolving those claims.

OTA assessed how different kinds of tort reforms would address the various aspects of the malpractice system that might motivate physi-

cians to practice defensively. We also analyzed the extent to which different proposals address the fundamental problem of how to discourage defensive practices that are clearly wasteful or very costly in relation to their benefits without discouraging "good" defensive practices.

Traditional Tort Reforms

Over the past 20 years, almost every state has passed some type of medical malpractice tort reform. Most of the legislative activity occurred during the mid-1970s and mid-1980s, in response to two malpractice "crises" marked by rapid increases in medical malpractice insurance premiums (22).

The "traditional" tort reforms enacted by many states have, for the most part, tinkered with the details of the existing system, leaving malpractice cases in the tort system. The goal of most of these state-level reforms has been to reduce malpractice insurance premiums by limiting the number of claims, the costs of resolving a claim, or the damages that can be paid. The reforms adopted most widely in the states include:[4]

- shortening the statute of limitations (the time period in which a suit can be brought),
- limiting plaintiffs' attorney fees,
- requiring or allowing pretrial screening of claims,
- placing caps on damages,
- amending the collateral source rule (requiring or letting the jury reduce the award by the amount received from health or disability insurance), and
- periodic payment of damages (instead of up-front lump-sum payment).

Although some of these reforms effectively limit the direct costs of malpractice (i.e., malpractice insurance premiums) (236), evidence of their effect on defensive medicine is weak.

The best evidence that physicians' behavior can be altered by reducing the frequency with which plaintiffs sue, or the amounts that can be recovered when they do, comes from a study of the impact of malpractice risk on Caesarean delivery rates in New York State (128, 129). That study, which found a systematic relationship between the strength of various malpractice risk measures (i.e., claim frequency and insurance premiums) and Caesarean delivery rates, is consistent with the hypothesis that tort reforms that reduce claim frequency or malpractice premiums will reduce defensive behavior. Yet. it is unknown how far Localio's findings for obstetricians and Caesarean rates can be generalized to other states, specialties. clinical situations, or procedures-especially in light of the failure of other studies funded by OTA to find a correlation between malpractice risk and clinical behavior.

To the extent that physicians respond not to the absolute risk of suit but to their inability to predict what kinds of behavior will lead to a suit, they may behave defensively even in the face of very low malpractice risks. Malpractice reforms that limit damages or reduce claim frequency without making the system more predictable may not have much effect on defensive behavior. In the early 1970s, when malpractice claim frequency and premiums were quite low compared with today's levels, there was still considerable concern about defensive medicine (13, 14,20,58,243).

Some experts have suggested that states (or the federal government) develop compensation guidelines to help juries determine a "fair" award for noneconomic damages (i.e.. "pain and suffering") (23a). The guidelines would be keyed to characteristics of the plaintiff and his or her injuries. including age and type or level of disability. This approach would be less punishing to seriously injured plaintiffs than a single cap on damages applicable to all cases, and it would also promote consistency in amounts awarded across juries and jurisdictions.

[4] For a detailed compendium of the current implementation of these reforms in the 50 states, see OTA's background paper on the subject (236).

The effect of such compensation guidelines on claim frequency is unpredictable, because they would probably raise some awards while lowering others. If the mean award declined, claim frequency would decline as plaintiffs' attorneys weighed the lower potential payouts from success against the cost of pursuing a case. Such marginal reduction in claim frequency would probably not do much to induce physicians to reduce defensive medicine.

One problem with the traditional tort reforms enacted by the states is that their effect on defensive medicine is not very well targeted. While they may reduce physicians' general anxieties about being sued, these reforms do not send specific signals about which defensive practices are more or less appropriate.[5] Thus, even when limits on access to the courts or on amounts that can be recovered do reduce defensive medicine, they may do so indiscriminately, reducing appropriate as well as inappropriate practices.

Recent Malpractice Reform Proposals

Recent proposals for malpractice system reform go beyond the traditional approaches of the 1970s and 1980s. They involve substantive changes in the relationships among the parties to malpractice suits or in the process or criteria used to determine negligence and compensation. They include the following:

- greater use of clinical practice guidelines as the standard of cam,
- enterprise liability,
- alternative dispute resolution (ADR), and
- selective no-fault malpractice systems.

Clinical Practice Guidelines

A larger role for clinical practice guidelines in medical malpractice litigation is being tested in a small number of states. The State of Maine's ongoing experimental program has become a model for such efforts. In Maine, selected guidelines can be used as an affirmative defense (i.e., a complete defense if it can be shown that the defendant adhered to the guidelines). The state has recently adopted guidelines in areas of practice thought to involve substantial defensive medicine (e. g., Caesarean deliveries, cervical spine x-rays for head injury, preoperative testing).

The Maine guidelines were written in part to reduce defensive medical practice. For example, Maine's guideline for cervical spine x-rays provides physicians with explicit criteria for when it is *not* necessary to obtain such an examination. If these guidelines are upheld in court, physicians may be able to rely on them for legal protection when they decline to perform such a test.

There is some evidence that the Maine initiative has reduced defensive medicine in some Select procedures (e.g., cervical spine x-rays in emergency rooms). Because the number of clinical situations in which such guidelines can be applied is limited, however, these approaches may not have much of an impact overall on medical practice or health care costs.

Even under the current legal system, where guidelines carry no greater legal weight than other expert testimony, the continued development of clinical practice guidelines by professional groups and governments might reduce defensive medicine in certain areas if they help clarify the legal standard of care.

The greatest potential benefit for increasing the use of guidelines in the tort system is that they offer a method for *selectively* addressing problems of defensive medicine by differentiating procedures that are appropriate from those that are not worth their medical risks and costs. They can also address instances in which defensive medicine is practiced unconsciously by alerting physicians to the new standard of care as reflected in the guidelines.

[5] Indeed, there is virtually no information on whether reductions in malpractice risk lead to improvements or a decrease in the quality of medical care. Localio's study of Caesarean deliveries in New York State did not address the effect on patient outcomes of lower Caesarean delivery rates in areas with lower malpractice risk.

It is worth noting, however, that guidelines are generally developed by panels of experts (usually dominated by physicians) who, for a variety of reasons, may recommend aggressive use of diagnostic and therapeutic interventions without consideration of the implications for health care costs. For example, prior to the 1992 reauthorization of the federal government new guideline development program, the expert groups developing the guidelines were advised to consider only medical effectiveness and risks, and *not* the cost, of interventions (241). Moreover, when there is a great deal of uncertainty about the relative effectiveness of alternative courses of action, the developers of guidelines often demur from taking a stand and instead provide an array of diagnostic and treatment options, leaving it to the physician to make the choice. Thus, the net impact of the general trend toward more development of practice guidelines on defensive medicine is unclear.

Enterprise Liability

The main feature of enterprise liability is that the physician would no longer be personal] y liable for his or her malpractice. Instead, the institution in which the physician practices, or the health plan responsible for paying for the services, would assume the physician's liability.

Enterprise liability promises certain efficiencies; for example, eliminating the costs of suits involving multiple defendants and thereby facilitating settlement. It could also promote better quality control within institutions and health plans while relieving physicians of some of the psychological burdens of a malpractice suit.

Although the physician would not be named in the suit and may not have as great a role in the pretrial discovery process, if the case does go to trial, the physician would probably be the primary witness. (Presently, only 10 to 20 percent of malpractice cases go to trial.) Thus, although there maybe some psychological benefit to physicians of not being held personally liable, they may still feel burdened by the prospect of having to defend their actions in court.

The number of claims against health plans or institutions could go up under enterprise liability if patients feel more comfortable suing institutions than suing their own doctors. If doctors find themselves being witnesses in a larger number of suits, and subject to greater oversight and possibly disciplinary action by the institution in which they practice, they could become even more fearful of malpractice and, hence, practice more defensive medicine.

The enterprise that assumes the liability would have incentives to limit potential suits and improve the quality of care. Enterprise liability may not, however, lead to a reduction in the kinds of defensive medicine whose costs are high in relation to their potential benefits unless the organization also has incentives to limit health care costs. If the organization that assumes liability has no financial incentive to control health care costs, it may target its quality control efforts to eliminate all adverse events and charge patients or their insurers for defensive procedures with low benefits and high costs.

Alternative Dispute Resolution

ADR can take many forms, but a common attribute of most such programs is that the dispute is heard or decided by one or more arbitrators or mediators rather than by a jury. The ADR proceeding is often less formal, less costly, and less public than a judicial trial.

ADR can be nonbinding or binding. For nonbinding ADR, the case can still proceed to trial. Therefore, if physicians practice defensively out of anxiety about court trials, binding ADR may be the better approach to reduce defensive medicine.

The most feasible approach to binding ADR is voluntary pretreatment contracts between patients and providers (or between patients and health plans) in which the parties agree prior to treatment to arbitrate any malpractice suit that might arise from that treatment. This approach has not been

tried very often because of present uncertainty about the enforceability of such contracts.6

To the extent that physicians believe an ADR system is more fair than the judicial system, they might practice less defensively. Also, cases would not go to public trial under binding ADR, so if physicians abhor the publicity of a trial, they would be relieved of that concern.

On the other hand, arbitrators may be more likely to reach compromise decisions rather than completely exonerate the physician. Physicians might find they are held liable more often in arbitration than in trial. An increase in liability findings could make physicians more defensive.

Finally, ADR may increase the frequency of suits, because the cost of bringing a claim should be lower and plaintiffs may find arbitration less intimidating than civil litigation. To the extent that physicians react to increasing claim frequency by becoming more defensive, this feature of ADR could increase the practice of defensive medicine.

Like the traditional malpractice reforms, any effect of ADR on defensive medicine would be general; ADR could not provide specific guidance about which defensive medical practices are, and which are not, worth their costs.

The American Medical Association/ Specialty Society Medical Liability Project

Another ADR model has been proposed by the American Medical Association and 31 national medical specialty societies (AMA/S SMLP). Each state's medical licensing board would have exclusive authority to hear and decide malpractice claims. The newly expanded medical licensing boards would consist of seven members, with no more than three coming from the health professions,

The AMA/SSMLP proposal outlines in detail the process for claim resolution and proposes certain revisions in the legal rules to be used, including a cap on damages and a change in the legal standard of care to more explicitly recognize resource limitations. For plaintiffs, the plan offers easier filing of claims and free legal services once a claim is judged to have merit. Most cases would probably be decided by a claims investigator, a single physician, or a hearing examiner, depending on the stage at which they are resolved.

Although the proposal would eliminate physicians' anxiety about court trials, linking malpractice claim resolution with medical licensing could make physicians apprehensive in another way. In addition, if the AMA is correct in its prediction that many more injured patients would file claims under such a system, physicians could find themselves named in more claims. Both of these factors—higher claims frequency and the increased link between malpractice claims and formal disciplinary bodies--could increase incentives to practice defensive medicine.

On the other hand, if the determinations of the medical boards improve the consistency of findings of negligence, physicians may get clearer signals about which kinds of defensive medicine will protect them from disciplinary actions. Thus, the system may differentiate better than the present system between "good" and "bad" defensive medicine.

Selective No-Fault

Under a selective no-fault system, medical experts would identify categories of medical injuries that would be compensable without a determination of fault on the part of the physician. When these injuries occur, patients would be compensated through some kind of administrative system. Claims not involving these injuries would still be compensated through either a judicial system or an ADR system, retaining negligence as the liability standard.

Virginia and Florida have implemented no-fault systems for a selected set of severe birth-related injuries. These injuries were chosen because the issue of causality is very muddled in these cases (i.e., it is difficult to prove that an injury did not result from the birth process). Although the

[6] The courts often scrutinize the fairness of such contracts, because the health care provider usually has superior bargaining power.

two programs have been operational for close to five years, no studies have documented whether these programs have increased the availability of obstetric care or changed the use of any obstetric procedures.

A selective no-fault system with broader application across a wide array of clinical situations has been proposed by researchers since the early 1970s (2, 19,22 1). The developers of this proposal have identified about 150 "accelerated compensation events" (ACES), defined by adverse outcomes resulting from certain clinical actions or omissions. These adverse outcomes should be avoidable with good medical care. Under their proposal, injuries falling into an ACE category would be compensated quickly and with no inquiry into negligence.

Selective no-fault goes further than enterprise liability in relieving the physician of personal liability; it should therefore reduce some pressures to practice defensively, Yet compensation under an ACE may still carry a personal stigma for the physician.

ACES can and probably would be used to monitor the quality of care as well as to determine compensation, and physicians might be disciplined if they are implicated in a large number of ACES. Some ACES involve failure to diagnose a fatal condition, such as breast cancer. If, as OTA contends, a substantial proportion of defensive medicine involves extra tests and procedures to avoid very unlikely but serious consequences, physicians may feel as compelled to practice defensively to avoid an ACE as they do to avoid a malpractice suit.

DEFENSIVE MEDICINE IN AN ERA OF HEALTH CARE REFORM

Positive defensive medicine as it is practiced today evolved in the context of a fee-for-service health care system in which physicians for the most part faced little or no financial penalty and sometimes were financially rewarded when they ordered or performed extra tests and procedures. Even the growth of health maintenance organizations (HMOs), which put plans at risk of exceeding their capitated budgets, has not changed this reality for most of the health care system.[7]

As noted above, OTA concluded that most defensive medicine practices are not completely wasteful but instead reflect the tendency of liability concerns to push physicians' tolerance for medical risks of a bad outcome to extremely low levels. The fee-for-service system of third-party payment both empowers and encourages physicians to practice very low-risk medicine.

A new health care delivery system may evolve in the coming years as a consequence of health care reform. Whether the new system actually changes the financial incentives to order or perform tests and procedures remains to be seen, but some proposals clear] y do envision a new set of incentives. In particular, proposals that embody managed competition as a governing framework for the organization of the health care system would create incentives for health plans to reduce the number of procedures used by their members.

Just as the malpractice system may push doctors' tolerance for medical risks to low levels, managed competition may provide a countervailing force to raise it back up. Indeed, a critical question regarding managed competition is how quali(y of care will be monitored and enforced in plans where incentives to cut costs are strong.

For all its problems, the medical malpractice system is designed to hold the medical profession to an acceptable level of quality by deterring negligence. Whether the current malpractice system is effective in achieving this objective is a matter

[7] Today, only about 17 percent of Americans are enrolled in HMOs (141).

[8] *Managed competition* i, this report refers to a system in which each consumer chooses among competing health plans that offer a standard set of benefits at different prices (i.e., premiums). Competition among plans for patients on the basis of price as well as quality would presumably force plans to look for opportunities to eliminate wasteful or only marginally useful servIces. In acid tion, the Administration's proposal imposes caps on increases in health insurance premiums. I t is expected that plans will exert greater influence on their participant ing doctors and hospitals to be more cost conscious in *making clinical decisions*

of debate. OTA found only one study that tested the deterrent effect of the malpractices system, and that study failed to show an effect:

> In an attempt to estimate the deterrent effect of the malpractice system, researchers at Harvard University recently analyzed the relationship between the number of malpractice claims per negligent injury and the rate of negligent injury in New York State hospitals in 1984. They failed to demonstrate a statistically significant relationship between malpractice claim activity and the rate of negligent injury in a hospital (254).[9]

Nevertheless, given new incentives to do less rather than more in a "reformed" health care system, major reforms of the medical malpractice system that reduce or remove incentives to practice defensively could reduce or remove a deterrent to providing too little care at the very time that such mechanisms are most needed.

Ultimately two questions must be answered as the United States moves to a new health care system:

- what level of medical risk are the American people willing to bear for the sake of cost containment?
- what quality assurance mechanisms should be used to decide on and enforce adherence to that level?

Under the malpractice system as it is currently configured, juries help decide the acceptable level of medical risk in at least some cases. Better methods may exist, but until such alternatives are tried and tested, the advisability of major changes in the malpractice system is a policy issue that deserves careful consideration.

POLICY OPTIONS

OTA's assessment of the extent of defensive medicine will not close the debate on how often such practices are performed, how costly they are, or how much they affect the quality of care. Although physicians do not appear to *consciously* practice defensive medicine as often as they say they do, the malpractice system may have a subtle and cumulative effect over time on what physicians believe is the appropriate level of care. This *unconscious* component of defensive medicine may comprise a large part of the defensive medicine "problem." Yet, an unknown proportion of both conscious and unconscious defensive medicine improves the outcomes of patient care.

A reasonable goal of federal policy would ~be to reduce physicians' ability or incentives to engage (either consciously or unconsciously) in defensive practices whose benefits to patients are not worth their costs. Finding specific policies that move the health care system toward that goal is not so easy, however.

Below are four specific options for addressing the problem of defensive medicine. Each is imperfect, some more so than others. OTA has provided a rationale for suggesting that certain of these options provide a sharper scalpel than others for excising the "bad" practices while retaining the "good." Finally, each policy option has different implications for fairness and equity to patients. These implications are laid out in the discussion following each option.

OPTION 1: *Reduce the strength of the malpractice signal by mandating traditional tort reforms that limit plaintiffs' access to the courts or potential compensation.*

Some traditional tort reforms, particularly caps on noneconomic damages and elimination of the collateral source rule, have been shown to reduce malpractice premiums consistently in a number of studies. Any tort reform that makes it more difficult to prove liability or less potentially remunerative for a plaintiff to file and pursue a malpractice case should reduce claim frequency or payouts.

[9] Lack of statistically significant findings in this case may result from the small sample of hospitals in the study. The estimated effect of the malpractice system on negligent injuries was negative, though not statistically significant.

That malpractice premiums are lower in the presence of these reforms is therefore not surprising.

The evidence linking frequency of claims and malpractice premiums to the frequency with which physicians practice defensive medicine is sparse, consisting of one study showing that lower claims frequency and lower premiums are associated with lower rates of Caesarean deliveries (128). (Smaller studies of other procedures commissioned by OTA failed to find an effect.) That study did not address the effect of differences in Caesarean delivery rates on patient outcomes. Thus, while the very limited existing evidence supports the notion that defensive medicine might be sensitive to the general strength of the malpractice signal, the existence of the effect across different procedures and the impact on the quality of care are unknown.

The main problem with using the traditional reforms to reduce defensive medicine is that they do not target the practices that are likely to be least medically beneficial. In reducing physicians general anxiety about being sued or having unlimited financial exposure, the y may also weaken whatever "deterrence" value the current malpractice system provides, with no quality assurance system offered in its place to otherwise hold physicians accountable for the care they render.

Some traditional tort reforms, particularly those that limit potential compensation (e.g., caps on damages or mandatory periodic payment of damages), affect the vety small minority of plaintiffs who receive high damage awards. These are disproportionately those with the most severe injuries. Not only does this raise the issue of fairness to victims of negligence, but it ~UISO sends a signal to physicians that the most serious results of malpractice will have more limited financial consequences.

OPTION 2: *Consider permanent changes in malpractice law only after the structure of the health care system under federal health care reform has been settled.*

A "go-slow" approach to malpractice reform would permit state and federal policy makers to assess the incentives and quality assurance mechanisms inherent in health care reform before changing the basic structure of the malpractice system.

While this approach would avoid the potential for removing whatever "deterrence" value the current malpractice system offers before alternative quality assurance mechanisms are in place, it could also put the malpractice system in direct conflict with the incentives inherent in health care reform. In particular, under health care reform. physicians may feel pressure to make cost-benefit tradeoffs in their clinical choices. Yet the current legal standard of care does not explicitly recognize cost concerns as a legitimate input into clinical decisionmaking.

Over time, cost-benefit tradeoffs may become integrated into the customary standard of care and the courts will defer to this new standard of care. However, there is likely to be a transition period in which the physician will be pushed to conserve resources but will not be provided legal protection for those decisions. This could lead to new tensions among physicians. patients, and patients' health plans.

OPTION 3: *Promote predictability in the legal standard of care for defensive clinical situations using practice guidelines.*

One kind of malpractice reform that will be useful regardless of the shape of health care reform is the development and enhanced use as evidence in the courts of' clinical practice guidelines covering situations in which defensive medicine plays a substantial role.

OTA found that Caesarean deliveries and head injuries in emergency rooms are two clinical situations in which defensive medicine is a major problem. Other possible subjects for guideline development include procedures for followup of routine mammography (see chapter 2) and routine preoperative testing (125).

The federal government already has the administrative mechanisms in place to sponsor guideline development efforts in areas identified as high potential sources of inappropriate defensive prac-

tices. The Agency for Health Care Policy and Research's Office of the Forum for Quality and Effectiveness in Health Care could sponsor the development of such guidelines and dissemination to the states. It could also act as a clearinghouse for similar defensive-medicine targeted guidelines developed at the state level.

The development and dissemination of guidelines linked to specific problems of defensive medicine may be enough to encourage states to adopt legislation that would give them greater weight in court and thus help clarify the standard of care. Alternatively, the federal government could mandate changes in state civil procedure to make it easy to introduce such guidelines as evidence or to enhance their evidentiary weight. Constitutional issues would have to be considered in designing any such federal legislation.

The impact of this approach on defensive medicine is more predictable than other reforms, because guidelines would be targeted to specific areas where defensive medical practice is prevalent and widely agreed to promote medical practices with low expected benefits and high costs.

The overall impact on health care practices and costs is likely to be small, however. There are probably a very limited number of clinical situations in which such guidelines could be developed with sufficient specificity to provide clear-cut clinical guidance and legal protection. In addition, even if clinical practice guidelines do indicate when a procedure need not be ordered, there is no guarantee that physicians will substantially change their behavior to conform to such guidelines.

It must also be recognized that such guidelines, when legislatively mandated for use in malpractice cases, are implicitly setting upper limits on the cost that society is willing to bear for small improvements in health outcomes. Who makes these decisions (e.g., physician groups, broadly representative public commissions) may affect the acceptability of guidelines to practicing physicians, their legal status, and the degree to which they reflect society's true preferences.

Establish demonstration projects of malpractice reforms that either remove or limit the physician's involvement in the litigation proc - en.

Physicians express dissatisfaction with many aspects of the legal system, for example, large noneconomic damages, the jury's ability to determine the standard of care, and the quality of expert witnesses.

Although traditional tort reforms may reduce physicians' anxieties about being sued or financially ruined, they do not eliminate the threat of being sued and do nothing to clarify the standard of care. Reforms that relieve the physician of personal liability may be more likely to reduce defensive medicine. The two most promising reforms from this perspective are:

- selective no-fault compensation systems using ACES, and
- enterprise liability.

If personal liability is retained, then reforms that significantly alter the nature of the physician's interaction with the legal system to provide greater consistency in outcomes and payouts may have some impact on defensive medic inc. Such reforms include:

- programs to encourage the use of binding arbitration, and
- the AMA/SSMLP administrative proposal.

The impact of these reforms on defensive medicine is unknown. However, any reform that relieves the physician of personal liability could also have an adverse impact on the quality of care. To counter this effect, quality control systems would need to be in place. If these systems used sanctions to ensure quality, they could also prompt defensive medical practice. Much would depend on whether physicians perceive new quali-

t y control systems as rational and fair—two adjectives rarely used by physicians to describe the tort system.

Because of the many uncertainties about the impact of these reforms on defensive medicine and the quality of care, state-level demonstrations may be warranted to evaluate these more innovative alternatives before full-scale commitment to any particular model.

Finally, the savings generated through reductions in defensive medicine, which are likely to be modest overall, are unlikely to offset the additional costs of some of these reforms. In particular, a selective no-fault system and the AMA/SSMLP administrative proposal will probably substantially increase net expenditures for medical injury compensation.

Defensive Medicine: Definition and Causes 2

Despitc 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 medic inc. 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 implicat ions 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 the y 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.

[2] For example, Dr. James Todd, executive vice president of the American Medical Association, recently defined defensive medicine as "objective measures 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).

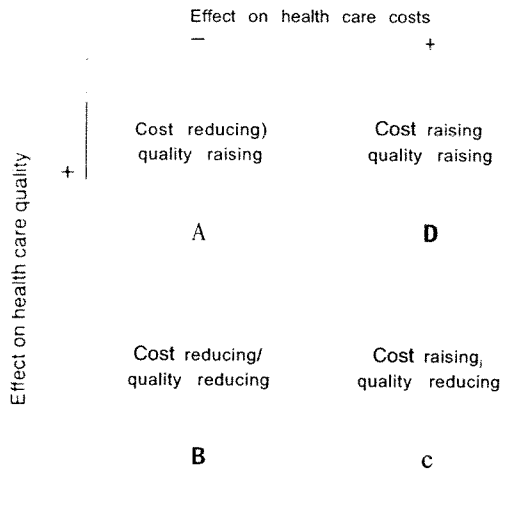
This definition conflicts with other definitions of defensive medicine. The Secretary's Commission on Medical Malpractice, for example, defined defensive medicine to include only those medical practices performed primarily to prevent or defend against the threat of liability *that are not medically justified (243).* This definition is consistent with the widely accepted pejorative view of doctors ordering unnecessary and cost] y 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 unquestionable y good for the health care system and its patients, because patients do better and health care costs are reduced. Box C includes practices that are unquestionabl y 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,()()0 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 be - tween appropriate and inappropriate medical procedures.

FIGURE 2-1: A Typology of Defensive Medical Practices



SOURCE: Office of Technology Assessment, 1994

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

[a]Lobular carcinomas considered benign
[b]There were 73 separate hospitals and offices
[c]Statistical significance of difference in percent malignant = p< 05

SOURCE J E Meyer, T Eberleln 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 (o 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 r_nt], 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 ii 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 Procedures[a]

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

[a]Total 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 potential] y 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.

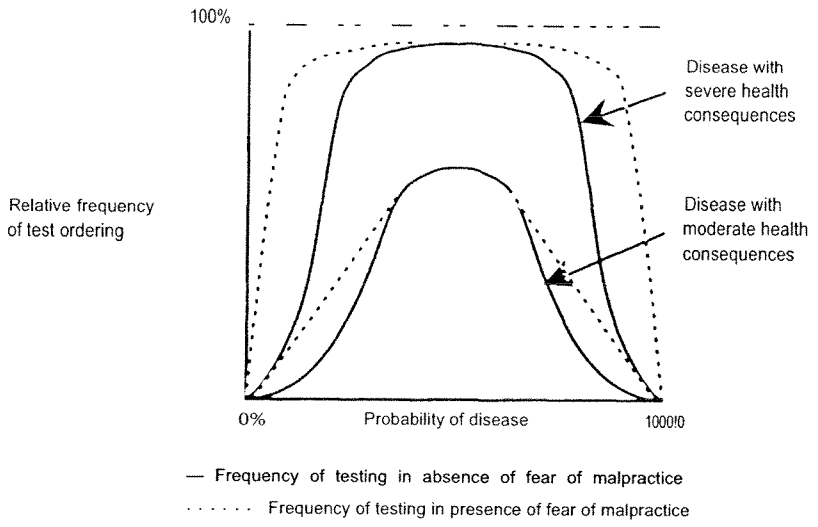
THE SOURCES OF DEFENSIVE MEDICINE

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-

[6]Not 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, I I 9).

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,' 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 insurance. 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

The best available empirical evidence indicates [hat -U) to 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 clai M suggest that payment of malpractice claims, whether through settlement or a 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 [hat 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 .l%	3870	3.2
Medium-risk general surgery[c]	234	109	21
High-risk obstetrics, orthopedics, neurosurgery	343	208	16
Suit status			
Never sued	149		
Sued at least once	238		
Overall	195	6.6	3.0

[a]The 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?"
[b]Includes associated specialties such as family practice, gastroenterology, and neurology
[c]Includes 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.[f] 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 repotting 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 Sees. 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-

[f]Most 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 prcmiums 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 deli\'-eries they perform (2 100).[9]

While malpractice insurance rates arc 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 physic i ans may incur some kind of financial or profcssiona 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 effective y 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 onversations 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 qual - ity 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 cxperience 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 l i able 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 ac - counted for 25 percent of all payouts, compared \vith 34 percent in 1993 (228).

The increasing relative importance of failure-t o-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 n 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 evidcnce that the physician"~ 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 ncgligence, 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 plain - tiff chance of survival with proper diagnosis or treatment would have been better than 50 percent (96,1 10).

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 consequenccs." 15 Finally, predicting surviva l 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
sive."

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 clinical - ly 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). Systems 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 (2 17). 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 (41,1 63).

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 healh 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 orgamozed signal and tries to anticipate future suits. This reactive and emoional 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 every-one 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 con-cern, 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 med colegal 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 philoso-phy 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 [jun or 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 wor-ried 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.

- "1 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."
- "1 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 "

[a]Center 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". " I n add i t ion, 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, financial, and psychological consequences of litigation but, on balance, they tend to overestimate the risk of these effects as well.

Young physicians in residency training maybe 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.

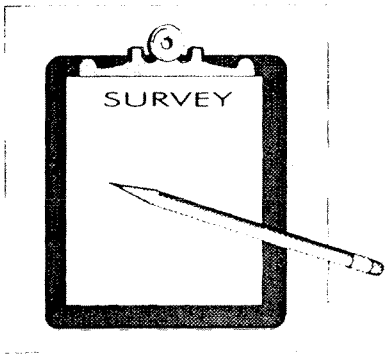
Summary of the Evidence on Defensive Medicine

3

For more than two decades, news stories, interest groups, and witnesses at congressional hearings have quoted estimates of the extent of defensive medicine and its impact on health care costs. Often these statements have been based on anecdotes, which mayor may not represent the general experience of physicians in the United States.

This chapter reviews the evidence regarding the extent of defensive medicine in the United States, including new evidence developed as part of this Office of Technology Assessment (OTA) study. It begins by outlining the major strengths and weaknesses of methods used to measure defensive medicine. It then summarizes the findings of many studies conducted over the past two decades.

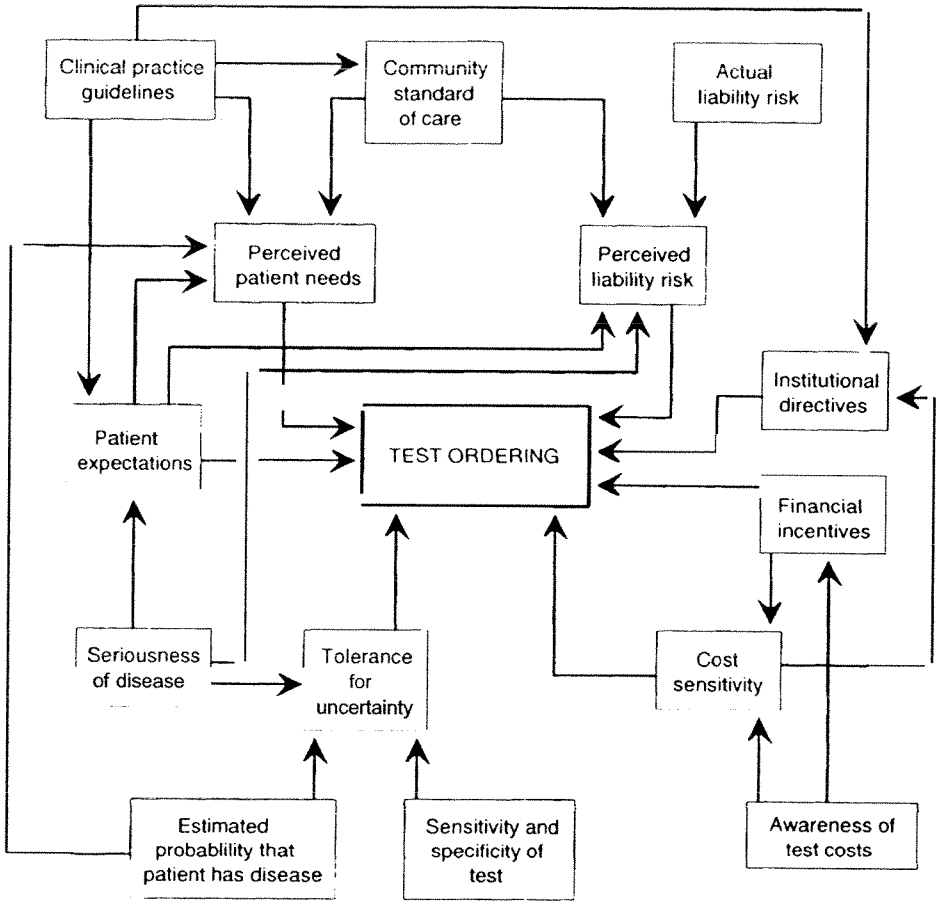
Some studies surveyed physicians directly about the extent of their defensive behavior; others used objective data and more sophisticated statistical analyses. To expand the base of knowledge in this area, OTA undertook four physician surveys and commissioned three additional empirical studies.



APPROACHES TO MEASURING THE EXTENT OF DEFENSIVE MEDICINE

A challenge facing all approaches to measuring the extent of defensive medicine is to isolate the precise contribution that concern about malpractice liability makes to medical practice decisions. Defensive medicine typically operates in tandem with other forces to motivate clinical practice decisions. Figure 3-1 presents a model of the many influences on physician test ordering or treatment decisions. Some of these influences are clinical:

FIGURE 3-1: A Behavioral Model of Physician Test Ordering



SOURCE Off Ice of Technology Assessment, 1994 Adapted from unpublished work of Richard Kravitz, MD, Assistant Professor of Medicine, University of California, Davis School of Medicine. Sacramento, CA

- patient symptoms,
- seriousness of the suspected disease,
- degree of certainty about diagnosis,
- accuracy of the available diagnostic tests, and
- risks and benefits of treatment.

Other influences, in addition to the fear of malpractice liability, are nonclinical: 1

- availability of technology,
- physician specialty and training,
- practice organization (solo, group, hospital-based),
- familiarity with the patient,
- awareness of and sensitivity to test costs,
- financial incentives,
- patient expectations, and
- insurance status of the patient.

Sometimes these other factors dominate malpractice liability concerns; some, such as patients' insurance coverage and financial incentives under fee-for-service medicine, may enable physicians to act on their fear of liability.

There are four major methodologic approaches to measuring defensive medicine:

- direct physician surveys,
- physician clinical scenario surveys,
- statistical analyses of the impact of malpractice liability risk on utilization of procedures, and
- case studies.

The strengths and weaknesses of each of these approaches are discussed below.

Direct Physician Surveys

The simplest way to gauge the extent of defensive medicine is to ask physicians how their medical practices have been affected by the threat of malpractice liability. Questions typically asked in such surveys include whether malpractice concerns have caused the physician generally to use additional diagnostic or therapeutic procedures (positive defensive medicine) or to avoid high-risk patients or procedures or quit medical practice altogether (negative defensive medicine).

The major problem with this approach is that people do not always accurately report what they do. Most physician surveys of this sort inadvertently prompt respondents to think about malpractice liability and its potential effects on their medical practices. This "prompting" may lead physicians to respond in ways they would not if they were simply asked how and why their practices have changed—without asking directly about liability concerns. For example, the attention paid to defensive medicine by physic i an organizations, the news media, and policy makers might cause physicians to exaggerate the impact of liability concerns on their practices in the hope of eliciting a favorable political response,

An additional problem of most surveys of this kind is that they do not ask about the extent to which respondents practice defensive medicine—only *whether or not* they practice it.

Clinical Scenario Surveys

A clinical scenario survey typically presents physicians with a description of a simulated patient and asks them to choose specified clinical actions. Respondents then indicate which of a list of reasons influenced their choices, with one of the choices being malpractice liability concerns.

One advantage of this approach over the more general surveys described above is that prompting may be less direct if malpractice liability is only one among many reasons. Another advantage is that scenarios can focus in on areas where defensive medicine is thought to be a major concern. Finally, because they ask more concrete and precise questions about particular clinical situations, scenarios may permit more reliable estimates of the extent of defensive medicine in those particular areas.

Only one previously published study, conducted by the Duke Law Journal Project in 1970

[1] See appendix C for a review of the evidence linking these and other nonclinical factors to the utilization of services.

(58), has used this approach. OTA conducted four clinical scenario surveys of the memberships of three medical professional societies and contracted for a study of defensive medicine in New Jersey that used this approach.

To succeed in measuring defensive medicine, a clinical scenario survey must succinctly yet thoroughly describe the key features of the simulated case, provide lists of all likely clinical choices and meaningful reasons for making those choices, and blind the respondents to the purpose of the survey.

An open question is whether clinical scenarios that include "malpractice liability concerns" among potential reasons for choice, without any other references to defensive medicine, sufficiently "blind" respondents to the purpose of the survey. But not including a list of reasons (i.e., asking respondents to list their own reasons for each clinical choice) also runs the risk of biased responses. Physicians may regard such an "open-ended" instrument as a test of their medical knowledge and cite only clinical factors.

A critical limitation of clinical scenario surveys is that their results cannot be generalized beyond the specific scenarios, and results of different scenarios cannot be directly compared with one another. Indeed, the more clinical and demographic detail given in a scenario, the less generalizable its results are to other clinical situations. Finally, clinical scenario surveys capture only those defensive practices of which the physician is consciously aware.

Statistical Analyses of the Impact of Malpractice Liability Risk on Service Use

Some studies of defensive medicine employ statistical methods to systematically examine the utilization of one or more procedures (e.g., Caesarean delivery) as a function of the risk of being sued. Such studies, commonly called multivariate analyses, can control for other factors that might also influence physicians' behavior (e.g., patient age and health status, hospital characteristics, socioeconomic factors). These studies usually use existing utilization data gathered for other purposes, such as hospital discharge records or physician health insurance claims. The unit of analysis can be the individual physician, the hospital, or the geographic area.

The major strengths of this approach include the use of more objective data, the potential for large sample sizes, and the ability to control for many different influences on physician behavior. Typical problems confronting such studies include:

- limited generalizability due to the availability of data only for certain health care providers or localities,
- incomplete control for relevant factors other than malpractice liability (e.g., clinical indications),
- limited or problematic data on both independent and dependent variables, and
- small numbers of physicians or hospitals in certain categories or geographic areas.

To the extent that these limitations can be minimized, multivariate studies can provide strong evidence regarding the *incremental* impact of *differences* in malpractice liability risk on physicians' use of procedures. They cannot, however, provide a comprehensive estimate of the *extent* of defensive medicine.

For example, a multivariate study might determine that there is a difference in test ordering between physicians who have been sued and those who have not, or between physicians with higher and lower malpractice insurance premiums. It cannot, however, detect the overall level of defensive behavior that results from a generalized fear of malpractice liability among all physicians. Furthermore, even if multivariate studies succeed in finding a statistically significant association be-

[2]A **statistically significant** finding is one that is unlikely to have occurred solely as a result of chance. Throughout this report, a finding is considered to be statistically significant if the probability that it occurred due to chance alone is no greater than five out of 100—i.e., a "p value" of 0.05 or less.

tween levels of malpractice liability risk and physician behavior, the direction of causality still cannot be inferred with absolute certainty.

Case Studies

Case studies describe the impact of malpractice liability concerns on the use of a specific medical technology. Such studies can provide valuable detail on the role of malpractice liability in both the initial diffusion and current use of technologies. As part of this assessment, OTA commissioned a case study examining the influence of malpractice liability concerns on the diffusion of a new diagnostic technology first introduced in 1987: low osmolality contrast agents. (The findings of this case study are described in a subsequent section of this chapter.)

The primary limitation of case studies is that they typically must rely on subjective information and do not permit adequate control for the influence of factors other than defensive medicine on patterns of diffusion and use of technology.

EVIDENCE OF THE EXTENT OF DEFENSIVE MEDICINE

Direct Physician Surveys

OTA identified 47 separate surveys administered between 1983 and the present by state and national medical specialty societies and academic researchers that addressed medical professional liability issues. These surveys generally asked doctors directly how the medical liability climate or "tort signal" was affecting their practices. This section focuses on the survey findings regarding negative and positive defensive medicine. OTA limited its review to 32 surveys in which it was possible to identify the proportion of respondents who had changed their practice *and* had done so at least in part because of liability concerns.[3]

Thirty of the 32 studies addressed negative defensive medicine. Of these 30. eight were national surveys, nine were state-level surveys of all specialties, and 13 were state-level surveys of obstetrics providers. Figure 3-2 presents selected findings of these surveys of negative defensive medic inc. As the figure indicates, surveys were oriented toward different areas of practice and asked questions about negative defensive medicine in a variety of ways. The proportion of respondents indicating restrictions in their practices due to malpractice liability concerns ranged from 1 to 64 percent.4

A series of surveys with similar structures conducted by the American College of Obstetricians and Gynecologists between 1983 and 1992 shows an increase in the proportion of respondents reporting negative defensive medicine between 1983 and 1987 (from 31.8 to 43.7 percent). and then a slight decrease in the following years (from 41.8 percent in 1990 to 39.0 percent in 1992) (see figure 3-2).

Sixteen of the 32 studies reported on positive defensive medicine. Of these, five were national surveys and 11 were state-level. Selected findings are summarized in figure 3-3. Again, a variety of different specialties were surveyed and questions were posed in a number of different ways. Across these surveys, from 20 to 81 percent of physicians indicated that malpractice liability concerns had led them to order additional tests and procedures.

As the variation in question structure and responses in these surveys shows (see figures **3-2, 3-3),** direct physician surveys are a highly questionable source of quantitative information about defensive medicine. In the vast majority of the studies, the respondent was made aware that the survey was about malpractice liability and changes in the malpractice climate.

[3] Some surveys asked about practice changes and reasons for practice change in separate questions. Unless it was possible to link reasons directly with reported practice changes, OTA eliminated the surveys from this review.

[4] Unless otherwise specified in figure 3-2 or 3-3, the numbers shown reflect the percentage of *all* survey respondents who reported the indicated defensive behavior.